A02-552

Service
Service
Service

Product Service Group CE Audio

Between production week 0123 to 0152, a new CD99 DA11 module is used in production. This new CD module uses LA6531 as servo driver IC.

For servicing the sets which uses new CD module, please refer to the attached pages including:

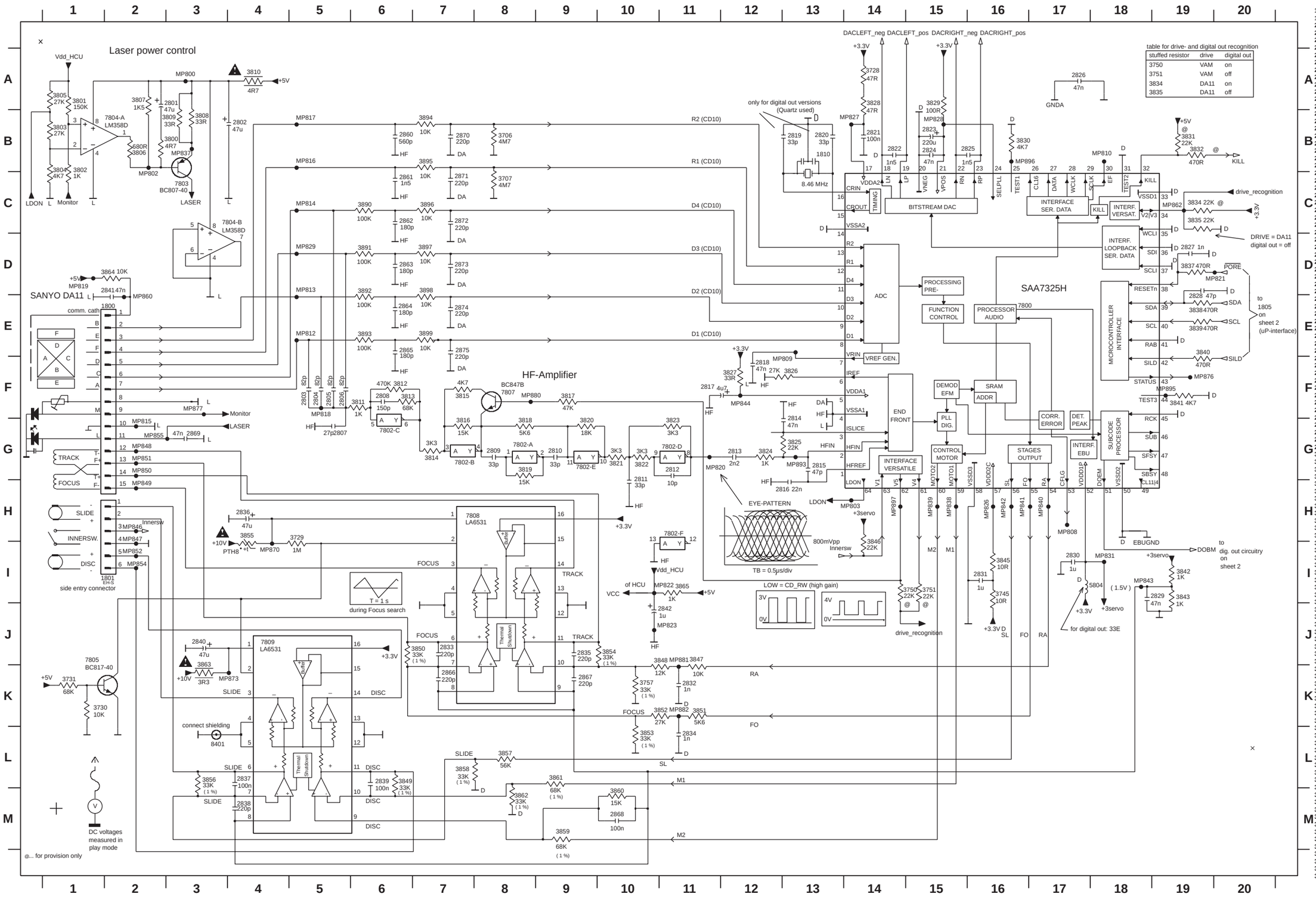
CD99 (LA6531) BOARD

circuit diagram - RF & control part 14-3
circuit diagram - audio & supply part 14-4
layout diagram 14-5

Electrical partslist .....16-7 - 16-8

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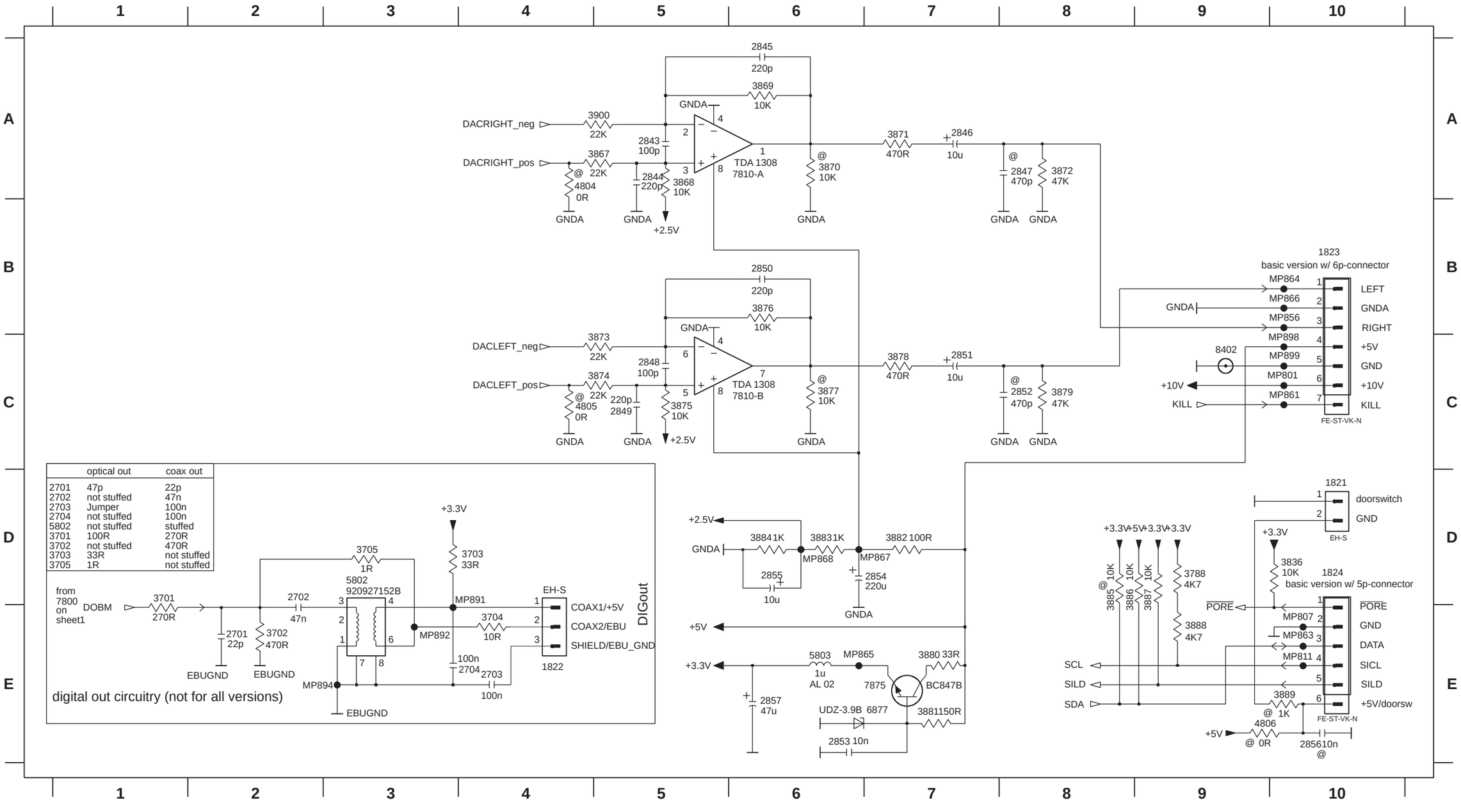
CIRCUIT DIAGRAM - CD99 (LA6531) PART 1



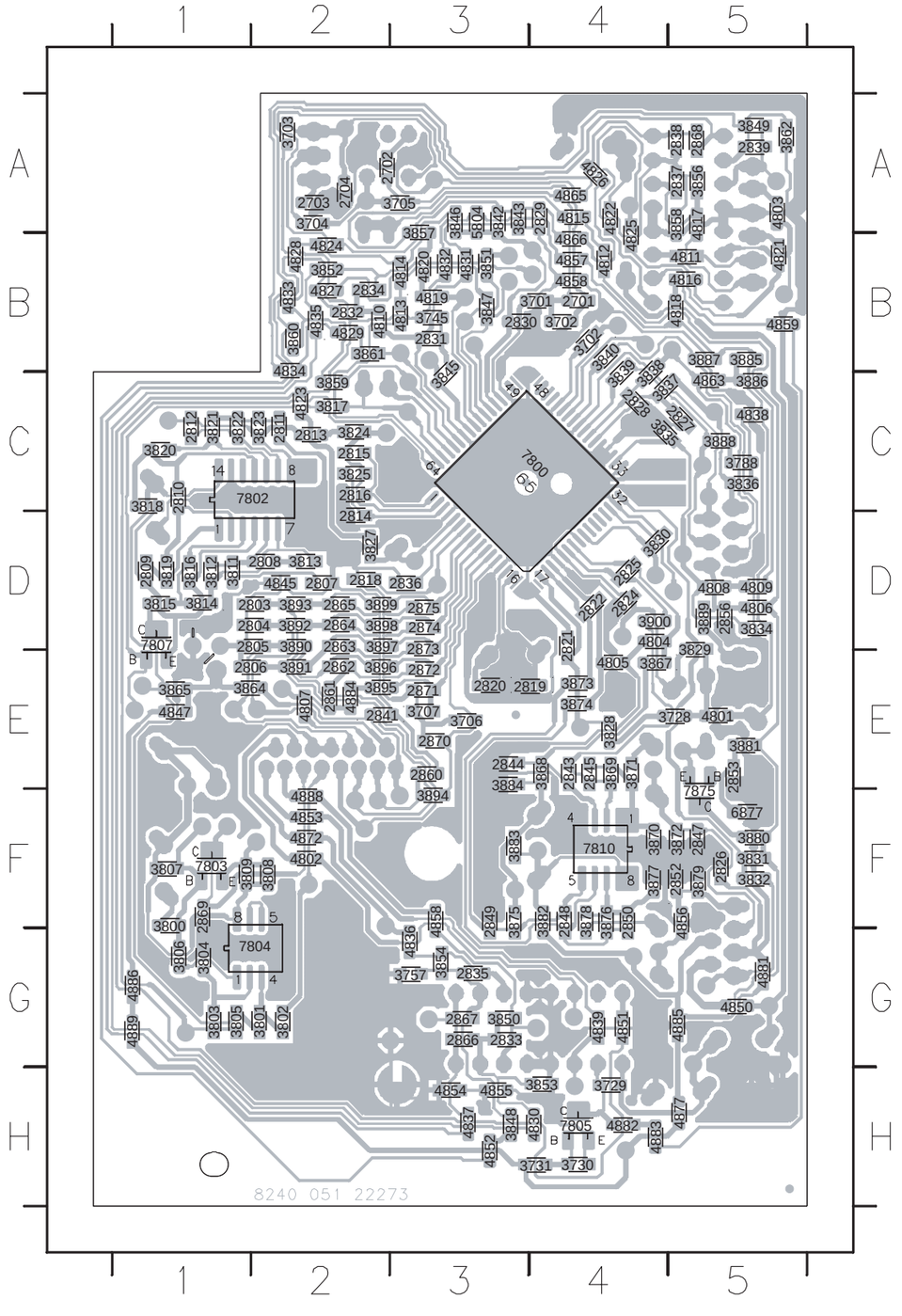
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CIRCUIT DIAGRAM - CD99 (LA6531) PART 2

1821 D10	2701 E2	2843 A5	2847 A8	2851 C7	2855 D6	3702 E2	3788 D9	3869 A6	3873 C5	3877 C6	3881 E7	3885 D8	3889 E10	4806 E9	7810-A A6	MP801 C10	MP861 C10	MP866 B10	MP892 E3
1822 E4	2702 D2	2844 A5	2848 C5	2852 C8	2856 E10	3703 D3	3836 D10	3870 A6	3874 C5	3878 C7	3882 D7	3886 D8	3900 A5	5802 D3	7810-B C6	MP807 E10	MP863 E10	MP867 D7	MP894 E2
1823 B10	2703 E4	2845 A6	2849 C5	2853 E6	2857 E6	3704 E4	3867 A5	3871 A7	3875 C5	3879 C8	3883 D6	3887 D9	4804 A4	5803 E6	7875 E7	MP811 E10	MP864 B10	MP868 D6	MP898 C10
1824 D10	2704 E4	2846 A7	2850 B6	2854 D6	3701 D1	3705 D3	3868 A5	3872 A8	3876 B6	3880 E7	3884 D6	3888 E9	4805 C4	6877 E7	8402 C9	MP856 B10	MP865 E6	MP891 D4	MP899 C10



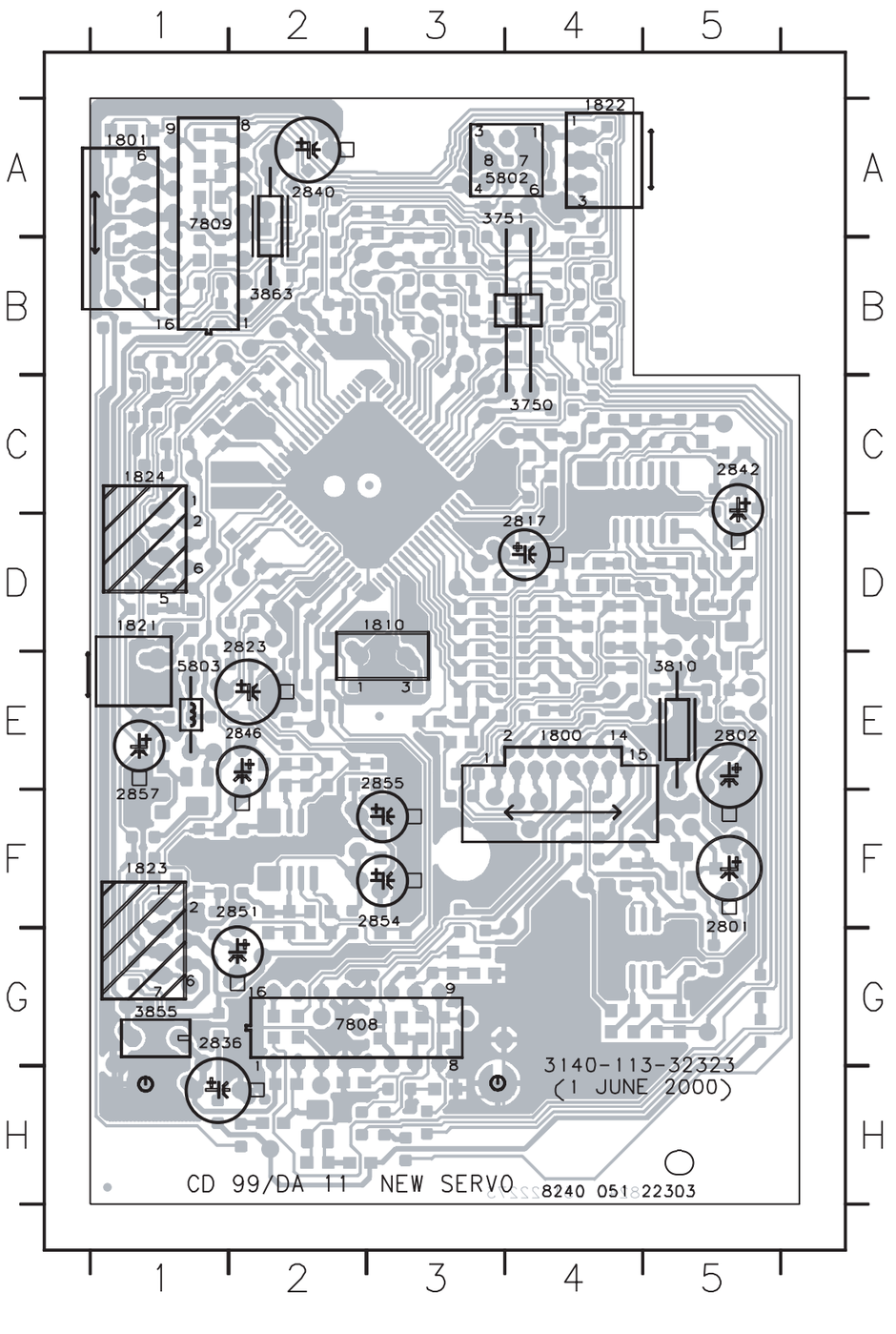
LAYOUT DIAGRAM - CD99 (LA6531) - Copper side



2701	B4	3702	B4	3857	B3	4825	B4
2702	A2	3703	A2	3858	A5	4826	A4
2703	A2	3704	A2	3859	C2	4827	B2
2704	A2	3705	A3	3860	B2	4828	B2
2803	D2	3706	E3	3861	B2	4829	B2
2804	D2	3707	E3	3862	A5	4830	H4
2805	D2	3728	E5	3864	E1	4831	B3
2806	E1	3729	H4	3865	E1	4832	B3
2807	D2	3730	H4	3867	E4	4833	B2
2808	D2	3731	H4	3868	E4	4834	B2
2809	D1	3745	B3	3869	E4	4835	B2
2810	C1	3757	G3	3870	F4	4836	G3
2811	C2	3788	C5	3871	E4	4837	H3
2812	C1	3800	F1	3872	F5	4838	C5
2813	C2	3801	G2	3873	E4	4839	G4
2814	D2	3802	G2	3874	E4	4845	D2
2815	C2	3803	G1	3875	F3	4847	E1
2816	C2	3804	G1	3876	F4	4848	B4
2818	D2	3805	G1	3877	F4	4850	G5
2819	E4	3806	G1	3878	F4	4851	G4
2820	E3	3807	F1	3879	F5	4852	H3
2821	D4	3808	F2	3880	F5	4853	F2
2822	D4	3809	F1	3881	E5	4854	H3
2824	D4	3811	D1	3882	F4	4855	H3
2825	D4	3812	D1	3883	F3	4856	F5
2826	F5	3813	D2	3884	E3	4857	B4
2827	C5	3814	D1	3885	B5	4858	F3
2828	C4	3815	D1	3886	C5	4859	B5
2829	A4	3816	D1	3887	B5	4863	C5
2830	B3	3817	C2	3888	C5	4865	A4
2831	B3	3818	C1	3889	D5	4866	B4
2832	B2	3819	D1	3890	D2	4872	F2
2833	G3	3820	C1	3891	E2	4877	H5
2834	B2	3821	C1	3892	D2	4881	G5
2835	G3	3822	C1	3893	D2	4882	H4
2837	A5	3823	C2	3894	F3	4883	H4
2838	A5	3824	C2	3895	E2	4884	E2
2839	A5	3825	C2	3896	E2	4885	G5
2841	E2	3826	D3	3897	D2	4886	G1
2843	E4	3827	D2	3898	D2	4888	F2
2844	E3	3828	E4	3899	D2	4889	G1
2845	E4	3829	D5	3900	D4	5804	A3
2847	F5	3830	D4	4801	E5	6877	F5
2848	F4	3831	F5	4802	F2	7800	C4
2849	F3	3832	F5	4803	A5	7802	C2
2850	F4	3834	D5	4804	D4	7803	F1
2852	F5	3835	C4	4805	E4	7804	G2
2853	E5	3836	C5	4806	D5	7805	H4
2856	D5	3837	C4	4807	E2	7807	D1
2860	E3	3838	C4	4808	D5	7810	F4
2861	E2	3839	C4	4809	D5	7875	F5
2862	E2	3840	B4	4810	B2		
2863	D2	3841	B4	4811	B5		
2864	D2	3842	A3	4812	B4		
2865	D2	3843	A3	4813	B3		
2866	G3	3845	C3	4814	B3		
2867	G3	3846	A3	4815	A4		
2868	A5	3847	B3	4816	B5		
2869	F1	3848	H3	4817	A5		
2870	E3	3849	A5	4818	B5		
2871	E3	3850	G3	4819	B3		
2872	E3	3851	B3	4820	B3		
2873	D3	3852	B2	4821	B5		
2874	D3	3853	H4	4822	A4		
2875	D3	3854	G3	4823	C2		
3701	B4	3856	A5	4824	B2		

LAYOUT DIAGRAM - CD99 (LA6531) - Component side

1800	E4	1823	F1	2823	D2	2851	F2	3751	A3	5803	E1
1801	A1	1824	C1	2836	G1	2854	F3	3810	E5	7808	G2
1810	D3	2801	F5	2840	A2	2855	E3	3855	G1	7809	A1
1821	D1	2802	E5	2842	C5	2857	F1	3863	B2	8401	H3
1822	A4	2817	D4	2846	E2	3750	C4	5802	A4	8402	H1



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ELECTRICAL PARTSLIST - CD BOARD

ELECTRICAL PARTSLIST - CD BOARD

- MISCELLANEOUS -

1800	4822 265 10925	FFC CONNECTOR 15-PINS
1823	4822 265 11207	CONNECTOR 6-PINS
1824	4822 265 11207	CONNECTOR 6-PINS

- CAPACITORS -

2801	4822 124 41751	47 F 20% 50V
2802	4822 124 41751	47 F 20% 50V
2803	4822 126 13695	82pF 1% NP0 63V
2804	4822 126 13695	82pF 1% NP0 63V
2805	4822 126 13695	82pF 1% NP0 63V
2806	4822 126 13695	82pF 1% NP0 63V
2807	4822 126 13691	27pF 1% NP0 63V
2808	5322 122 33538	150pF 2% NP0 63V
2809	4822 126 13691	27pF 1% NP0 63V
2810	4822 126 13691	27pF 1% NP0 63V
2811	5322 122 32659	33pF 5% 50V
2812	5322 122 32448	10pF 5% NP0 63V
2813	4822 122 33127	2,2nF 10% X7R 63V
2814	4822 126 13751	47nF 10% X7R 63V
2815	4822 126 13692	47pF 1% NP0 63V
2816	5322 122 32654	22nF 10% X7R 63V
2817	4822 124 40769	4,7 F 20% 100V
2818	4822 126 13751	47nF 10% X7R 63V
2821	4822 126 14585	100nF 10% X7R 50V
2822	4822 126 13344	1,5nF 5% 63V
2823	4822 124 42383	220 F 20% 4V
2824	4822 126 13751	47nF 10% X7R 63V
2825	4822 126 13344	1,5nF 5% 63V
2826	4822 126 13751	47nF 10% X7R 63V
2827	5322 122 31647	1nF 10% X7R 63V
2828	4822 126 13692	47pF 1% NP0 63V
2829	4822 126 13751	47nF 10% X7R 63V
2830	4822 126 14043	1 F +80-20% Y5V 16V
2831	4822 126 14043	1 F +80-20% Y5V 16V
2832	5322 122 31647	1nF 10% X7R 63V
2833	4822 122 33575	220pF 5% NP0 63V
2834	5322 122 31647	1nF 10% X7R 63V
2835	4822 122 33575	220pF 5% NP0 63V
2836	4822 124 41751	47 F 20% 50V
2837	4822 126 14585	100nF 10% X7R 50V
2838	4822 122 33575	220pF 5% NP0 63V
2839	4822 126 14585	100nF 10% X7R 50V
2840	4822 124 41751	47 F 20% 50V
2841	4822 126 13751	47nF 10% X7R 63V
2842	4822 124 21913	1 F 20% 63V
2843	5322 122 32531	100pF 5% NP0 50V
2844	4822 122 33575	220pF 5% NP0 63V
2845	4822 122 33575	220pF 5% NP0 63V
2846	4822 124 40248	10 F 20% 63V
2848	5322 122 32531	100pF 5% NP0 50V

- CAPACITORS -

2849	4822 122 33575	220pF 5% NP0 63V
2850	4822 122 33575	220pF 5% NP0 63V
2851	4822 124 40248	10 F 20% 63V
2853	4822 122 33177	10nF 20% X7R 50V
2854	4822 124 11912	220 F 20% 6,3V
2855	4822 124 11912	220 F 20% 6,3V
2857	4822 124 12362	47 20% 4V
2860	5322 116 80853	560pF 5% NP0 63V
2861	5322 122 31865	1,5nF 10% X7R 63V
2862	4822 126 10326	180pF 5% NP0 63V
2863	4822 126 10326	180pF 5% NP0 63V
2864	4822 126 10326	180pF 5% NP0 63V
2865	4822 126 10326	180pF 5% NP0 63V
2866	4822 122 33575	220pF 5% NP0 63V
2867	4822 122 33575	220pF 5% NP0 63V
2868	4822 126 14585	100nF 10% X7R 50V
2869	4822 126 13751	47nF 10% X7R 63V
2870	4822 122 33575	220pF 5% NP0 63V
2871	4822 122 33575	220pF 5% NP0 63V
2872	4822 122 33575	220pF 5% NP0 63V
2873	4822 122 33575	220pF 5% NP0 63V
2874	4822 122 33575	220pF 5% NP0 63V
2875	4822 122 33575	220pF 5% NP0 63V

- RESISTORS -

3751	4822 116 83872	220R 5% 0,5W
3752	4822 116 83872	220R 5% 0,5W
3753	4822 116 83872	220R 5% 0,5W
3762	4822 116 83872	220R 5% 0,5W
3763	4822 116 83872	220R 5% 0,5W
3764	4822 116 83872	220R 5% 0,5W
3767	4822 116 83883	470R 5% 0,5W
3770	4822 116 83883	470R 5% 0,5W
3803	4822 050 21003	10K 1% 0,6W
3804	4822 116 52257	22K 5% 0,5W
3807	4822 116 52226	560R 5% 0,5W
3815	4822 050 11002	1K 1% 0,4W
3816	4822 116 52283	47K 5% 0,5W
3817	4822 116 52283	47K 5% 0,5W
3818	4822 116 52239	120K 5% 0,5W
3819	4822 050 21003	10K 1% 0,6W
3820	4822 050 11002	1K 1% 0,4W
3825	4822 050 21003	10K 1% 0,6W
3826	4822 050 21003	10K 1% 0,6W
3827	4822 050 21003	10K 1% 0,6W
3828	4822 050 21003	10K 1% 0,6W
3829	4822 050 21003	10K 1% 0,6W
3830	4822 050 21003	10K 1% 0,6W
3832	4822 116 52191	33R 5% 0,5W
3833	4822 050 11002	1K 1% 0,4W

- RESISTORS -

3706	4822 051 20475	4,7M 5% 0,1W
3707	4822 051 20475	4,7M 5% 0,1W
3728	4822 051 20479	47R 5% 0,1W
3745	4822 051 20109	10R 5% 0,1W
3757	2120 108 92632	33K 1%
3788	4822 051 20472	4,7K 5% 0,1W
3800	4822 051 20478	4,7R 5% 0,1W
3801	4822 051 20154	150K 5% 0,1W
3802	4822 051 10102	1K 2% 0,25W
3803	4822 051 20273	27K 5% 0,1W
3804	4822 051 20472	4,7K 5% 0,1W
3805	4822 051 20273	27K 5% 0,1W
3806	4822 117 10361	680R 1% 0,1W
3807	4822 117 11139	1,5K 1% 0,1W
3808	4822 051 20339	33R 5% 0,1W
3809	4822 051 20339	33R 5% 0,1W
3810	4822 052 10478	4,7R 5% 0,33W
3811	4822 051 10102	1K 2% 0,25W
3812	4822 051 20474	470K 5% 0,1W
3813	4822 051 20683	68K 5% 0,1W
3814	4822 051 20332	3,3K 5% 0,1W
3815	4822 051 20472	4,7K 5% 0,1W
3816	4822 116 83933	15K 1% 0,1W
3817	4822 117 10834	47K 1% 0,1W
3818	4822 051 20562	5,6K 5% 0,1W
3819	4822 116 83933	15K 1% 0,1W
3820	4822 117 10965	18K 1% 0,1W
3821	4822 051 20332	3,3K 5% 0,1W
3822	4822 051 20332	3,3K 5% 0,1W
3823	4822 051 20332	3,3K 5% 0,1W
3824	4822 051 10102	1K 2% 0,25W
3825	4822 051 20223	22K 5% 0,1W
3826	4822 051 20273	27K 5% 0,1W
3827	4822 051 20339	33R 5% 0,1W
3828	4822 051 20479	47R 5% 0,1W
3829	4822 051 20101	100R 5% 0,1W
3830	4822 051 20472	4,7K 5% 0,1W
3835	4822 051 20223	22K 5% 0,1W
3836	4822 117 10833	10K 1% 0,1W
3837	4822 051 20471	470R 5% 0,1W
3838	4822 051 20471	470R 5% 0,1W
3839	4822 051 20471	470R 5% 0,1W
3840	4822 051 20471	470R 5% 0,1W
3841	4822 051 20472	4,7K 5% 0,1W
3842	4822 051 10102	1K 2% 0,25W
3843	4822 051 10102	1K 2% 0,25W
3845	4822 051 20109	10R 5% 0,1W
3846	4822 051 20223	22K 5% 0,1W
3847	4822 117 10833	10K 1% 0,1W
3848	4822 117 11383	12K 1% 0,1W

- RESISTORS -

3849	2120 108 92632	33K 1%
3850	2120 108 92632	33K 1%
3851	4822 051 20562	5,6K 5% 0,1W
3852	4822 051 20273	27K 5% 0,1W
3853	2120 108 92632	33K 1%
3854	2120 108 92632	33K 1%
3855	4822 116 40227	4,6R 25% 12V
3856	2120 108 92632	33K 1%
3857	4822 117 11148	56K 1% 0,1W
3858	2120 108 92632	33K 1%
3859	2120 108 92636	68K 1%
3860	4822 116 83933	15K 1% 0,1W
3861	2120 108 92636	68K 1%
3862	2120 108 92632	33K 1%
3863	4822 052 10338	3,3R 5% 0,33W
3864	4822 117 10833	10K 1% 0,1W
3865	4822 051 10102	1K 2% 0,25W
3867	4822 051 20223	22K 5% 0,1W
3868	4822 117 10833	10K 1% 0,1W
3869	4822 117 10833	10K 1% 0,1W
3871	4822 051 20471	470R 5% 0,1W
3872	4822 117 10834	47K 1% 0,1W
3873	4822 051 20223	22K 5% 0,1W
3874	4822 051 20223	22K 5% 0,1W
3875	4822 117 10833	10K 1% 0,1W
3876	4822 117 10833	10K 1% 0,1W
3878	4822 051 20471	470R 5% 0,1W
3879	4822 117 10834	47K 1% 0,1W
3880	4822 051 20339	33R 5% 0,1W
3881	4822 117 10353	150R 1% 0,1W
3882	4822 051 20101	100R 5% 0,1W
3883	4822 051 10102	1K 2% 0,25W
3884	4822 051 10102	1K 2% 0,25W
3886	4822 117 10833	10K 1% 0,1W
3887	4822 117 10833	10K 1% 0,1W
3888	4822 051 20472	4,7K 5% 0,1W
3889	4822 051 10102	1K 2% 0,25W
3890	4822 117 10837	100K 1% 0.1W
3891	4822 117 10837	100K 1% 0.1W
3892	4822 117 10837	100K 1% 0.1W
3893	4822 117 10837	100K 1% 0.1W
3894	4822 117 10833	10K 1% 0,1W
3895	4822 117 10833	10K 1% 0,1W
3896	4822 117 10833	10K 1% 0,1W
3897	4822 117 10833	10K 1% 0,1W
3898	4822 117 10833	10K 1% 0,1W
3899	4822 117 10833	10K 1% 0,1W
3900	4822 051 20223	22K 5% 0,1W
4801	4822 051 20008	0R JUMPER (0805)
4802	4822 051 20008	0R JUMPER (0805)

ELECTRICAL PARTSLIST - CD BOARD

- RESISTORS -

4803	4822 051 20008	0R JUMPER (0805)
4807	4822 051 20008	0R JUMPER (0805)
4808	4822 051 20008	0R JUMPER (0805)
4809	4822 051 20008	0R JUMPER (0805)
4810	4822 051 20008	0R JUMPER (0805)
4811	4822 051 20008	0R JUMPER (0805)
4812	4822 051 20008	0R JUMPER (0805)
4813	4822 051 20008	0R JUMPER (0805)
4814	4822 051 20008	0R JUMPER (0805)
4815	4822 051 20008	0R JUMPER (0805)
4816	4822 051 20008	0R JUMPER (0805)
4817	4822 051 20008	0R JUMPER (0805)
4818	4822 051 20008	0R JUMPER (0805)
4819	4822 051 20008	0R JUMPER (0805)
4820	4822 051 20008	0R JUMPER (0805)
4821	4822 051 20008	0R JUMPER (0805)
4822	4822 051 20008	0R JUMPER (0805)
4823	4822 051 20008	0R JUMPER (0805)
4824	4822 051 20008	0R JUMPER (0805)
4825	4822 051 20008	0R JUMPER (0805)
4826	4822 051 20008	0R JUMPER (0805)
4827	4822 051 20008	0R JUMPER (0805)
4828	4822 051 20008	0R JUMPER (0805)
4829	4822 051 20008	0R JUMPER (0805)
4830	4822 051 20008	0R JUMPER (0805)
4831	4822 051 20008	0R JUMPER (0805)
4832	4822 051 20008	0R JUMPER (0805)
4833	4822 051 20008	0R JUMPER (0805)
4834	4822 051 20008	0R JUMPER (0805)
4835	4822 051 20008	0R JUMPER (0805)
4836	4822 051 20008	0R JUMPER (0805)
4837	4822 051 20008	0R JUMPER (0805)
4838	4822 051 20008	0R JUMPER (0805)
4839	4822 051 20008	0R JUMPER (0805)
4845	4822 051 20008	0R JUMPER (0805)
4847	4822 051 20008	0R JUMPER (0805)
4848	4822 051 20008	0R JUMPER (0805)
4850	4822 051 20008	0R JUMPER (0805)
4851	4822 051 20008	0R JUMPER (0805)
4852	4822 051 20008	0R JUMPER (0805)
4853	4822 051 20008	0R JUMPER (0805)
4854	4822 051 20008	0R JUMPER (0805)
4855	4822 051 20008	0R JUMPER (0805)
4856	4822 051 20008	0R JUMPER (0805)
4857	4822 051 20008	0R JUMPER (0805)
4858	4822 051 20008	0R JUMPER (0805)
4859	4822 051 20008	0R JUMPER (0805)
4863	4822 051 20008	0R JUMPER (0805)
4865	4822 051 20008	0R JUMPER (0805)
4866	4822 051 20008	0R JUMPER (0805)

- RESISTORS -

4872	4822 051 20008	0R JUMPER (0805)
4877	4822 051 20008	0R JUMPER (0805)
4881	4822 051 20008	0R JUMPER (0805)
4884	4822 051 20008	0R JUMPER (0805)
4885	4822 051 20008	0R JUMPER (0805)
4886	4822 051 20008	0R JUMPER (0805)
4888	4822 051 20008	0R JUMPER (0805)
4889	4822 051 20008	0R JUMPER (0805)

- COILS & FILTERS -

1810	4822 242 73557	CER. RES. CST8,46MTW-TF01
5803	4822 157 53302	1UH
5804	4822 157 71206	BLM21A601SPT

- DIODES -

6877	4822 130 11564	UDZ3.9B

- IC & TRANSISTORS -

7800	9352 642 17557	SAA7325H/M2B
7802	5322 209 11517	PC74HCU04T
7803	5322 130 60123	BC807-40
7804	5322 209 82941	LM358D
7807	5322 130 42755	BC847C
7808	4822 209 32636	LA6531
7809	4822 209 32636	LA6531
7810	4822 209 33165	TDA1308T/N1
7875	5322 130 60159	BC846B

Note: Only these parts mentioned in the list are normal service parts.

Service
Service
Service

Volta ao Menu

Service Manual

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4806 725 27075

06/2000

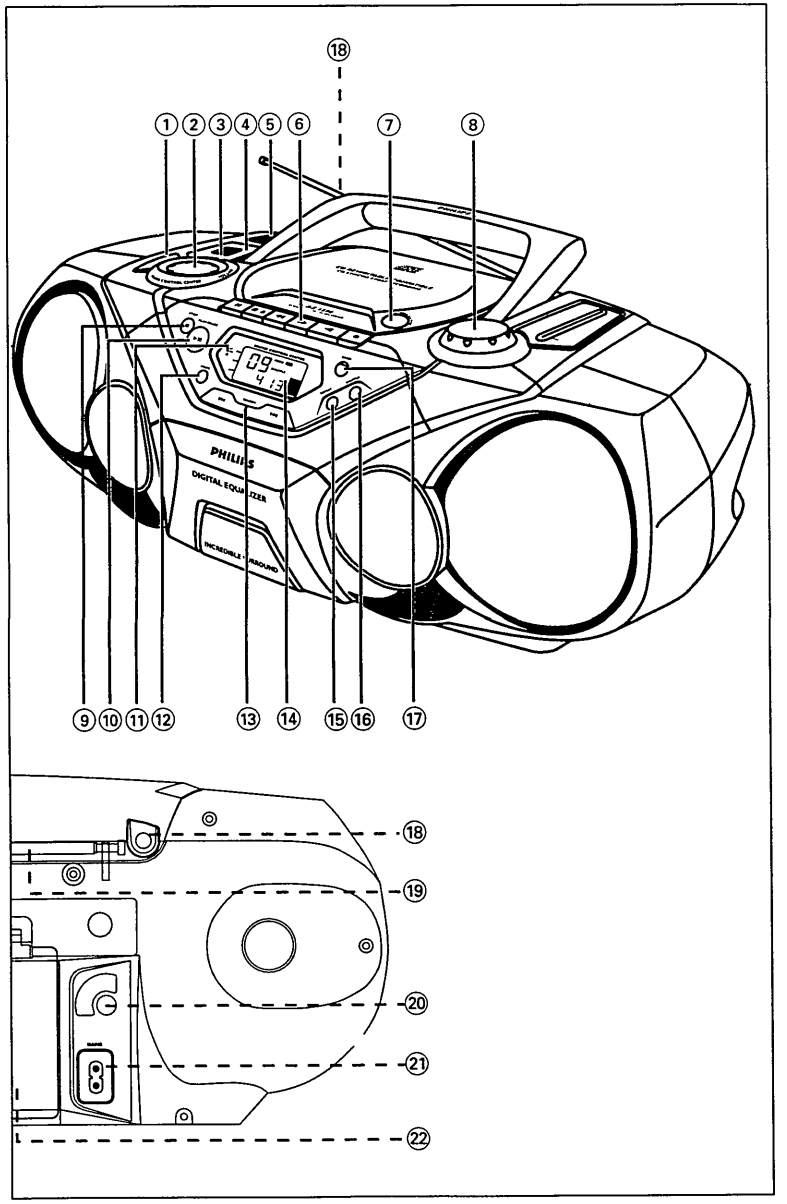
PHILIPS

SERVICE TOOLS

TORX T10 screwdriver with shaftlength 150mm.....4822 395 50423
TORX screwdriver set SBC 163.....4822 295 50145

Audio signal disc SBC 429.....4822 397 30184
Playability test disc SBC 444.....4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155

Universal test cassette Fe SBC 420.....4822 397 30071



TOP AND FRONT PANELS

① **DIGITAL EQUALIZER** – selects volume or the various frequencies for adjustment volume, bass, mid and high frequencies

② **VOLUME/SOUND CONTROL CENTER** – adjusts the volume level and digital equalizer settings

③ **DIGITAL DBB (Dynamic Bass Boost)** enhances the bass

④ **INCREDIBLE SURROUND** – creates a super-enhanced stereo effect

⑤ **POWER slider** – selects the sound source for CD/ TUNER/ TAPE and also switchesthe set off

⑥ **CASSETTE RECORDER keys:**
RECORD ● – starts recording
PLAY ◀ – starts playback
SEARCH ◀◀, ▶▶ – fast winds/rewinds the tape
OPEN•STOP ▲ ■ – opens the cassette compartment
– stops the tape;
PAUSE II – pauses recording or playback

⑦ **OPEN•CLOSE** – opens/ closes the CD door

⑧ **TUNING** – tunes to radio stations

⑨ **STOP ■** – stops CD playback or erase a CD programme

⑩ **PLAY•PAUSE ▶II** – starts or interrupts CD playback

⑪ **BATT LOW** – indicates when battery power is running low

⑫ **PROG** – programmes CD tracks and reviews the programme

⑬ **SEARCH ⏮, ⏭**
– searches back and forward within a CD track;
– skips to the beginning of a current CD track/ previous/ subsequent track

⑭ **Display** – shows the status of the set

⑮ **REPEAT** – repeats a track / CD programme / entire CD

⑯ **SHUFFLE** – plays CD tracks in random order

⑰ **BAND** – selects waveband.

BACK PANEL

⑱ ∩ – 3.5 mm headphone socket

⑲ **Telescopic aerial** – improves FM reception

⑳ **Voltage selector** – (not all versions) to be set to the local mains voltage. Disconnect the mains lead first if this selctor has to be adjusted

㉑ **AC MAINS** – inlet for mains lead

㉒ **Battery door**

Environmental information

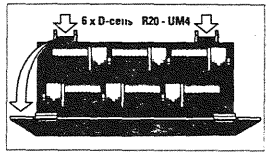
All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easy to separate into three mono-materials: cardboard (box), expandable polystyrene (buffer), polyethylene (bags, protective foam).

Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, exhausted batteries and old equipment.

PCS 104 213

Whenever convenient, use the power supply if you want to conserve battery life. Make sure you remove the plug from the set and wall socket before inserting batteries.

BATTERIES (OPTIONAL)

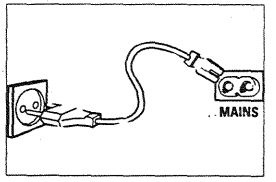


1. Open the battery compartment and insert six batteries, type **R-20**, **UM-4** or **D-cells**, (preferably alkaline) with the correct polarity as indicated by the "+" and "-" symbols inside the compartment.
2. Replace the compartment door, making sure the batteries are firmly and correctly in place. The set is now ready to operate

– If **BATT LOW** lights up, battery power is running low.
  – The **BATT LOW** indicator eventually goes out if the batteries are too weak.

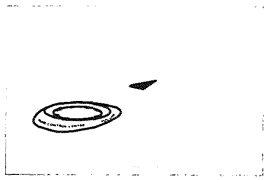
– *Incorrect use of batteries can cause electrolyte leakage and will corrode the compartment or cause the batteries to burst. Therefore:*
  – *Do not mix battery types,* e.g alkaline with carbon zinc. Only use batteries of the same type for the set.
  – When inserting new batteries, do not try to mix old batteries with the new ones.
  – Remove the batteries if the set is not to be used for a long time
  – ***Batteries contain chemical substances, so they should be disposed of properly***

USING AC POWER



1. Check if the mains voltage ***as shown on the type plate located on the bottom of the set***, corresponds to your local power supply. If it does not, consult your dealer or service centre.
2. If your set is equipped with a voltage selector, adjust the selector so that it matches with the local mains.
3. Connect the mains lead to the wall socket and the set is now ready for use.
4. To disconnect the set from the mains completely, remove the plug from the wall socket.

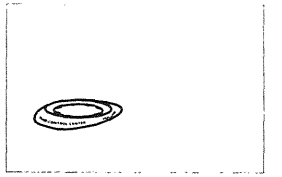
SWITCHING ON AND OFF

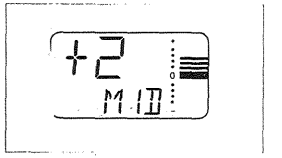


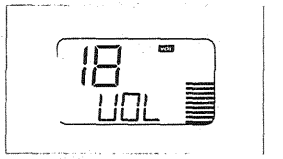
- Adjust the **POWER** slider to the desired sound source: **CD**, **TUNER** or **TAPE**.
- The set is switched off when the **POWER** slider is in the **TAPE/OFF** position and the keys on the tape deck are released.

– The volume, sound settings and tuner presets will be retained in the set's memory.

ADJUSTING VOLUME AND SOUND







1. Turn the **VOLUME/ SOUND CONTROL CENTER** control clockwise to increase or anti-clockwise to decrease volume on the set.

→ Display shows the volume level indication, **VOL** and a number from 0-32.

2. To adjust the bass, mid and high frequency levels, press **DIGITAL EQUALIZER** once or more until the desired option is displayed. While the option is shown, turn the **VOLUME/ SOUND CONTROL CENTER** control to increase or decrease (- 5 to + 5 steps maximum) the desired tone

→ **VOLUME** can also be adjusted in this way with a level range from 0-32.

3. Press **DIGITAL DBB** to switch dynamic bass boost on or off.

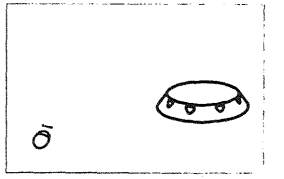
→ If on, the **DIGITAL DBB** light goes on.

4. Press **INCREDIBLE SURROUND** to switch the surround sound effect on or off.

→ If on, the **INCREDIBLE SURROUND** light goes on.

Note: *The effect of INCREDIBLE SURROUND may vary with different types of music.*

TUNING TO RADIO STATIONS

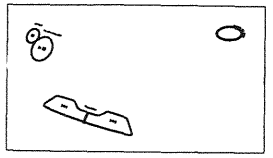


1. Select **TUNER** source.
2. Press **BAND** once or more to select your waveband.
3. To tune to a radio station, use the **TUNING** knob.

To improve radio reception:

- For ***FM***, pull out the telescopic aerial. Incline and turn the aerial. Reduce its length if the signal is too strong (very close to a transmitter).
- For ***MW(AM)***, the set is provided with a built-in aerial so the telescopic aerial is not needed. Direct the aerial by turning the whole set.

Playing a CD



1. Select **CD** source.
2. Press **OPEN•CLOSE** to open the CD door.
→ Display: Cd OPEN when you open the CD door.
3. Insert a CD or CD-R(W) with the printed side facing up and press **OPEN•CLOSE** to close the CD door.
→ Display: d ISC as the CD player scans the contents of a CD. The total number of tracks and playing time are then shown.
→ Display: nF DISC is shown if the CD R(W) is not finalised.
4. Press **PLAY•PAUSE ▶II** to start playback.
→ Display: Current track number and elapsed playing time of the track during CD playback.
5. To pause press **PLAY•PAUSE ▶II**. Press **PLAY•PAUSE ▶II** again to resume play.
→ The display freezes and the elapsed playing time flashes when playback is paused.
6. To stop CD playback, press **STOP ■**.

Note: *CD playback will also stop when:*
- *the CD door is opened;*
- *the CD has reached the end (unless you have selected REPEAT ALL);*
- *you select another source: TAPE / TUNER.*

Selecting a different track

- Press **SEARCH ⏮** or **⏭** once or repeatedly until the desired track number appears in the display.
- If you have selected a track number shortly after loading a CD or in the PAUSE position, you will need to press **PLAY•PAUSE ▶II** to start playback.

Finding a passage within a track

1. Press and hold down on **SEARCH ⏮** or **⏭**.
– The CD is played at high speed and low volume.
2. When you recognize the passage you want, release **SEARCH ⏮** or **⏭**.
– Normal playback continues.

Note: *During a CD programme or if SHUFFLE/ REPEAT active, searching is only possible within a track.*

Different play modes: SHUFFLE and REPEAT

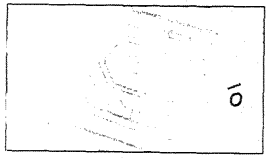
You can select and change the various play modes before or during playback. The play modes can also be combined with PROGRAM.

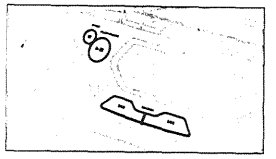
SHUFFLE - tracks of the entire CD/ programme are played in random order

SHUFFLE and **REPEAT ALL** - to repeat the entire CD/ programme continuously in random order

REPEAT ALL - to repeat the entire CD/ programme

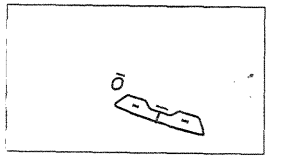
REPEAT and **SHUFFLE REPEAT** - plays the current (random) track continuously





1. To select your play mode, press the **SHUFFLE** or **REPEAT** button before or during playback until the display shows the desired function.
2. Press **PLAY•PAUSE ▶II** to start playback if in the STOP position.
- Playback starts immediately if you have selected a SHUFFLE mode.
3. To return to normal playback, press the respective **SHUFFLE** or **REPEAT** button until the various SHUFFLE / REPEAT modes are no longer displayed.
– *You can also press* **STOP ■** *to cancel your play mode.*

Programming track numbers



Programme in the STOP position to select and store your CD tracks in the desired sequence. If you like, store any track more than once. Up to 20 tracks can be stored in the memory.

1. Press **SEARCH ⏮** or **⏭** once or more to select your desired track number.
2. Press **PROG**.
→ Display: **PROG** and the selected track number. PROG appears briefly.
→ If you attempt to programme without first selecting a track number, no SEL is shown.
3. Press **PROG** to confirm the track number to be stored.
4. Repeat steps **1-2** to select and store all desired tracks.
→ FULL is displayed if you attempt to programme more than 20 tracks.
5. To start playback of your CD programme, press **PLAY•PAUSE ▶II**.

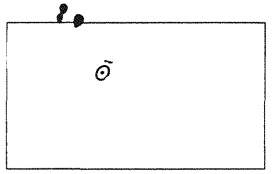
Note: *if you have selected the tracks during CD playback, first press* **STOP ■** *then* **PLAY•PAUSE ▶II**.

Reviewing the programme

In the stop position or during playback, press and hold down **PROG** for a while until the display shows all your stored track numbers in sequence.

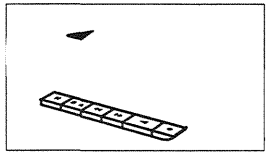
Erasing a programme

You can erase the programme by:
- pressing **STOP** ■ once in the STOP position;
- pressing **STOP** ■ twice during playback;
- The display shows PROG briefly and **PROG** disappears.



The programme is also erased by:
- pressing the CD door open;
- selecting another source: TAPE/ TUNER.

CASSETTE PLAYBACK



1. Select **TAPE** source.
→ The display shows **TAPE** throughout tape operation.
2. Press **OPEN•STOP** ▲■ to open the cassette door.
3. Insert a recorded cassette and close the cassette door.
4. Press **PLAY** ◀ to start playback.
5. To interrupt playback press **PAUSE** ❚❚. To resume, press this key again.
6. By pressing **SEARCH** ◀◀ or ▶▶ on the set fast winding of the tape is possible in both directions.
7. To stop the tape, press **OPEN•STOP** ▲■.

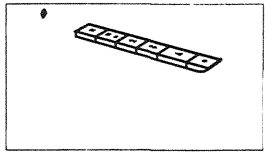
- *The keys are automatically released at the end of the tape, except if* **PAUSE** ❚❚ *has been activated.*

Note: *The sound source cannot be changed while playing a cassette.*

GENERAL INFORMATION ON RECORDING

- Recording is permissible insofar as copyright or otner rights of third parties are not infringed.
- This deck is not suited for recording on CHROME (IEC II) or METAL (IEC IV) type cassettes. For recording, use only NORMAL type cassettes (IEC I) on which the tabs have not been broken.
- The best recording level is set automatically. Altering the VOLUME, INCREDIBLE SURROUND, DIGITAL EQUALIZER or DBB controls will not affect the recording in progress.
- At the very beginning and end of the tape, no recording will take place during the 7 seconds, when the leader tape passes the recorder heads.
- To protect a tape from accidental erasure, have the tape in front of you and break out the left tab.
  Recording on this side is no longer possible. To record over this side again, cover the tabs with a piece of adhesive tape.

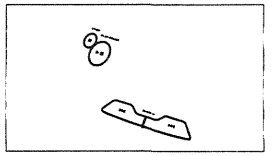
Synchro Start CD recording



1. Select CD source.
2. Insert a CD and if desired, programme track numbers.
3. Press **OPEN•STOP** ▲■ to open the cassette door.
4. Insert a suitable tape into the cassette deck and close the cassette door.
5. Press **RECORD** ● to start recording.

– Playing of the CD programme starts automatically from the beginning of the programme. It is not necessary to start the CD player separately.

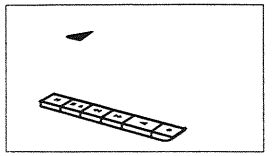
To select and record a particular passage within a track:



- Press and hold down on **SEARCH** ⏮ or ⏭.
- When you recognize the passage you want, release **SEARCH** ⏮ or ⏭.
- To interrupt CD playback press **PLAY•PAUSE** ▶❚❚.
- Recording will begin from this exact point in the track when you press **RECORD** ●.

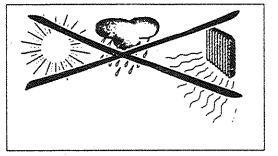
6. For brief interruptions during recording, press **PAUSE** ❚❚. To resume recording, press **PAUSE** ❚❚ again.
7. To stop recording, press **OPEN•STOP** ▲■.

Recording from the tuner



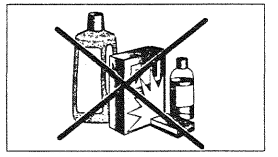
1. Tune to the desired radio station (see Tuning to radio stations).
2. Press **OPEN•STOP ▲■** to open the cassette door.
3. Insert a suitable tape into the cassette deck and close the cassette door.
4. Press **RECORD ●** to start recording.
5. For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.
6. To stop recording, press **OPEN•STOP ▲■**.

General maintenance



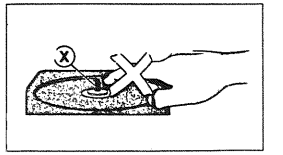
- Do not expose the set, batteries, CDs or cassettes to humidity, rain, sand or excessive heat caused by heating equipment or direct sunlight.
- To clean the set, use a soft, slightly dampened chamois leather. Do not use any cleaning agents containing alcohol, ammonia, benzene or abrasives as these may harm the housing.

Safety information



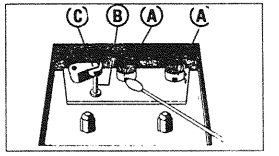
- Place the set on a hard and flat surface so that the system does not tilt. Make sure there is adequate ventilation to prevent the system from overheating.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.

CD player and CD handling



- If the CD player cannot read CDs correctly, use a commonly available cleaning CD to clean the lens before taking the set to repair. Other cleaning methods may destroy the lens.
- The lens of the CD player should never be touched!
- Sudden changes in the surrounding temperature can cause condensation to cloud over on the lens of your CD player. Playing a CD is then not possible. Do not attempt to clean the lens but leave the set in a warm environment until the moisture evaporates.
- Always keep the CD compartment closed to avoid dust on the lens.
- To take a CD out of its box, press the centre spindle while lifting the CD. Always pick up the CD by the edge and return the CD to its box after use to avoid scratching and dust.
- To clean the CD, wipe in a straight line from the centre towards the edge using a soft, lint-free cloth. Do not use cleaning agents as they may damage the disc.
- *Never* write on a CD or attach any stickers to it.

Tape deck maintenance



To ensure quality recording and playback of the tape deck, clean parts Ⓐ, Ⓑ and Ⓒ shown in the diagram below, after approx. 50 hours of operation, or on average once a month. Use a cotton bud slightly moistened with alcohol or a special head cleaning fluid to clean both decks.

1. Open the cassette holder by pressing **OPEN•STOP ▲■**.
2. Press **PLAY ◄** and clean the rubber pressure rollers Ⓒ.
3. Press **PAUSE II** and clean the magnetic heads Ⓐ and also the capstan Ⓑ.
4. After cleaning, press **OPEN•STOP ▲■**.

Note: *Cleaning of the heads can also be done by playing a cleaning cassette through once.*

If a fault occurs, first check the points listed below before taking the set for repair.
If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: ***Do not open the set as there is a risk of electric shock. Under no circumstances should you try to repair the set yourself, as this will invalidate the guarantee.***

PROBLEM
- *POSSIBLE CAUSE*
- *REMEDY*

No sound/power
- *VOLUME not adjusted*
- *Adjust the VOLUME*
- *Headphones connected*
- *Disconnect headphones*
- *Mains lead not securely connected*
- *Connect AC mains lead properly*

Severe radio hum or noise
- *Electrical interference: set too close to TV, VCR or computer*
- *Increase the distance*

Poor radio reception
- *Weak radio signal*
- *FM: Direct the FM telescopic aerial for optimum reception*

no DISC indication
- *CD badly scratched or dirty*
- *Replace/ clean CD, see Maintenance*
- *Laser lens steamed up*
- *Wait until lens has cleared*

The CD skips tracks
- *CD damaged or dirty*
- *Replace or clean CD*
- *SHUFFLE or PROGRAM is active*
- *Switch off SHUFFLE / PROGRAM*

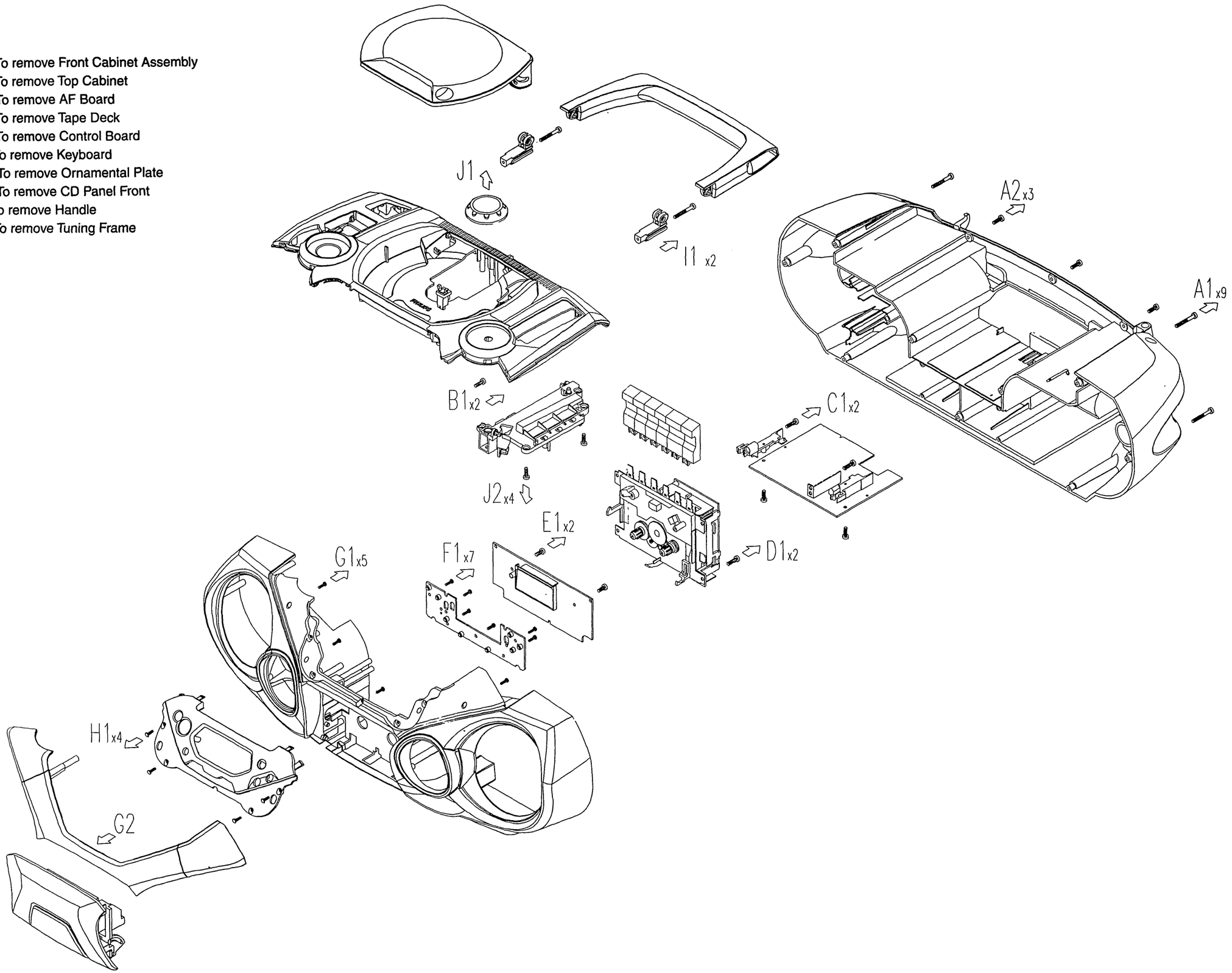
Poor cassette sound quality
- *Dust and dirt on the heads, etc.*
- *Clean deck parts, see Maintenance*
- *Use of incompatible cassette types (METAL or CHROME)*
- *Only use NORMAL (IEC I) for recording*

Recording does not work
- *Cassette tab(s) may be broken*
- *Apply a piece of adhesive tape over the missing tab space.*

nF DISC indication
- *CD-R(W) is blank or the disc is not finalised*
- *Use a finalised CD-R(W)*

DISASSEMBLY DIAGRAM

A. To remove Front Cabinet Assembly
B. To remove Top Cabinet
C. To remove AF Board
D. To remove Tape Deck
E. To remove Control Board
F. To remove Keyboard
G. To remove Ornamental Plate
H. To remove CD Panel Front
I. To remove Handle
J. To remove Tuning Frame



CD SERVICE TESTPROGRAM

- *STOP* button pressed in any step returns to begin of Service Testprogram
- To leave Service Testprogram switch mode switch to off-position
- Door switch is ignored → CD door can be opened
- *Volume up/down* buttons function independentely of the service testprogram

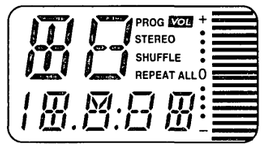
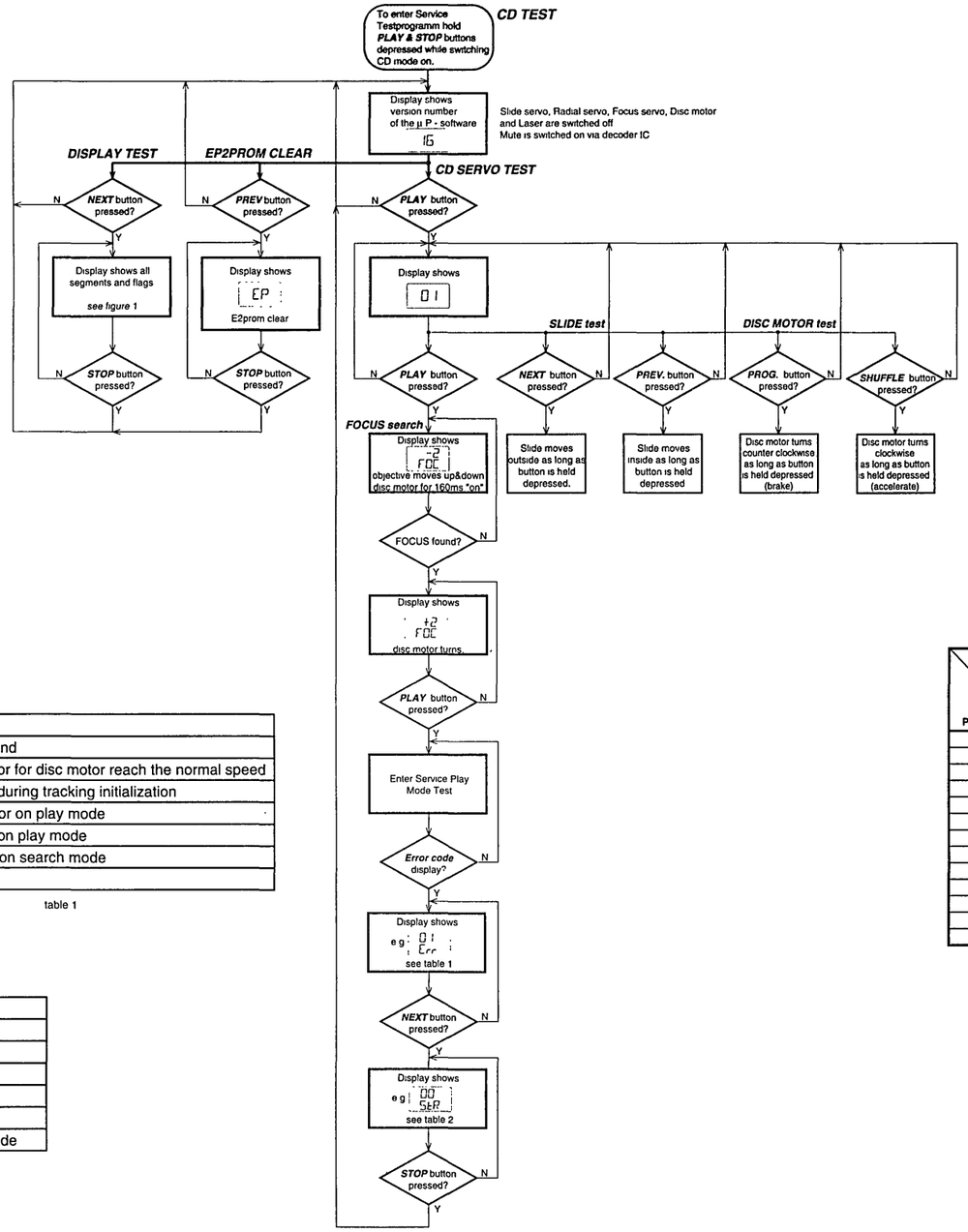
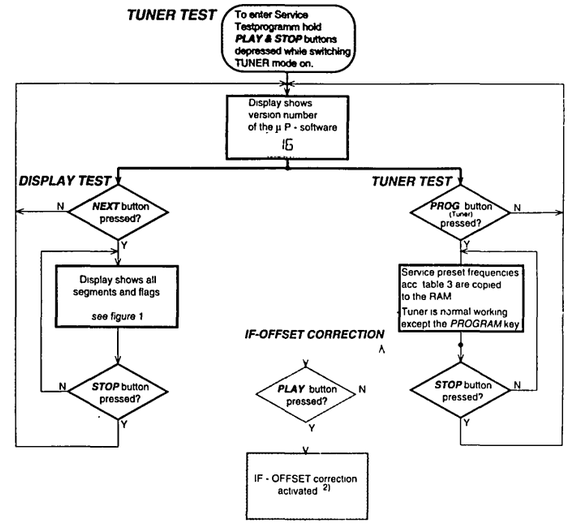


fig 1





ERROR	MEANING
Err 1	No focus found
Err 2	Time out error for disc motor reach the normal speed
Err 3	Focus error during tracking initialization
Err 4	Subcode error on play mode
Err 5	Focus error on play mode
Err 6	Radial error on search mode
Err 7	Focus error

table 1

STATUS	MEANING
Sta 0	Silde mode
Sta 1	Silde mode
Sta 2	Silde mode
Sta 3	Silde mode
Sta 8	Play mode
Sta > 8	Recover mode

table 2

SERVICE PRESET FREQUENCIES

REGION / PRESET	EUROPE FM/MW/LW /00/05/20/25	EUROPE4B FM/MW/LW/SW /00/05/20/25	EUROPE2B FM/MW /00	OVERSEAS FM/MW [1] Gnd switchable 10-100kHz/9 50kHz /01/21	OVERSEAS3B FM/MW/SW [1] Gnd switchable 10 100kHz/9 50kHz /01/21	KOREA FM/MW /13/33	EAST-EUROPE FM/MW/LW /14/34	EAST-EUROPE FM/MW /14	USA FM/MW /14/37	CHINA FM/MW/SW /15/35
1	87.5 MHz	87.5 MHz	87 5 MHz	87 5 MHz	87 5 MHz	87 5 MHz	65 81 MHz	65 81 MHz	87 5 MHz	87 5 MHz
2	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz	108 MHz	108 Mhz	108 Mhz	108 MHz	108 MHz
3	531 kHz	531 kHz	531 kHz	531/530 KHz	531/530 KHz	531 kHz	74 MHz	74 MHz	530 kHz	531 kHz
4	1602 kHz	1602 kHz	1602 kHz	1602/1700 kHz	1602/1700 kHz	1602 kHz	87 5 MHz	87 5 MHz	1700 kHz	1602 kHz
5	558 kHz	558 kHz	558 kHz	558/560 kHz	558/560 kHz	558 kHz	531 kH	531 kHz	560 kHz	558 kHz
6	1494 kHz	1494 kHz	1494 kHz	1494/1500 kHz	1494/1500 kHz	1494 kHz	1602 l	1602 kHz	1500 kHz	1494 kHz
7	153 kHz	153 kHz	-	-	3 9 MHz	-	558 kH	558 kHz	-	5 9 MHz
8	279 kHz	279 kHz	-	-	12 1 MHz	-	1494 kHz	1494 kHz	-	17 9 MHz
9	198 kHz	198 kHz	-	-	4 2 MHz	-	153 kHz	-	-	6 2 MHz
10	-	5 9 MHz	-	-	11 MHz	-	279 kHz	-	-	17 MHz
11	-	17 9 MHz	-	-	-	-	198 kHz	-	-	-
12	-	6 2 MHz	-	-	-	-	-	-	-	-
13	-	17 MHz	-	-	-	-	-	-	-	-

table 3

1) **How to set frequency grid:**

AM - 9 kHz / FM - 50 kHz : Hold ***PROGRAM KEY*** buttons depressed while switching MODE-switch to RADIO

AM - 10 kHz / FM - 100 kHz : Hold ***PROGRAM KEY*** buttons depressed while switching MODE-switch to RADIO

Selected frequency grid is stored in the EEPROM

2) In sets with 30kHz grid on FM band it may occur that the tuned frequency is indicated wrong on the display because of tolerances of the discriminator filter.
For that reason the testsoftware is prepared for an *automatic IF-offset correction*
Note: This test functions only with the East European tuner version used in /14/34 set versions.
The test was executed on every set in the production line.
In case the discriminator filter or the EEPROM has to be exchanged the *automatic IF-offset correction* should also be executed after repair.
To execute the *automatic IF-offset correction proceed as follows*
* feed a strong 87 5MHz signal to the antenna
* press the PLAY button
The µP starts now several times the *search* mode
If the transmitter was found at 87 5MHz the stop-frequency sent by the radio IC is compared with the nominal frequency else the display shows "00E"
When the same difference is found twice the value will be stored as offset
The actual used offset is shown on the display (-3, -2, -1, 0, 1, 2, 3)

Abbreviations and Pin-description of CD Ics

SERVO PROCESSOR SAA7325H

SYMBOL	PIN	DESCRIPTION
HFREF	1	comparator common mode input
HFIN	2	comparator signal input
ISLICE	3	current feedback output from data slicer
V_{SSA1}	4(1)	analog ground 1
V_{DDA1}	5(1)	analog supply voltage 1
I_{ref}	6	reference current output pin
V_{RIN}	7	reference voltage for servo ADC's
D1	8	unipolar current input (central diode signal input)
D2	9	unipolar current input (central diode signal input)
D3	10	unipolar current input (central diode signal input)
D4	11	unipolar current input (central diode signal input)
R1	12	unipolar current input (satellite diode signal input)
R2	13	unipolar current input (satellite diode signal input)
V_{SSA2}	14(1)	analog ground 2
CROUT	15	crystal/resonator output
CRIN	16	crystal/resonator input
V_{DDA2}	17(1)	analog supply voltage 2
LN	18	DAC left channel differential output - negative
LP	19	DAC left channel differential output - positive
V_{neg}	20	DAC negative reference input
V_{pos}	21	DAC positive reference input
RN	22	DAC right channel differential output - negative
RP	23	DAC right channel differential output - positive
SELPLL	24	selects whether internal clock multiplier PLL is used
TEST1	25	test control input 1; this pin should be tied LOW
CL16	26	16.9344 MHz system clock output
DATA	27	serial d4(1)ata output (3-state)
WCLK	28	word clock output (3-state)
SCLK	29	serial bit clock output (3-state)
EF	30	C2 error flag output (3-state)
TEST2	31	test control input 2; this pin should be tied LOW
KILL	32	kill output (programmable; open-drain)
V_{SSD1}	33(1)	digital ground 2
V2/V3	34	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
WCLI	35	word clock iutput (for data loopback to DAC)
SDI	36	serial data input (for data loopback to DAC)
SCLI	37	serial bit clock input (for data loopback to DAC)
RESET	38	power-on reset input (active LOW)
SDA	39	microcontroller interface data I/O line (open-drain output)
SCL	40	microcontroller interface clock line input

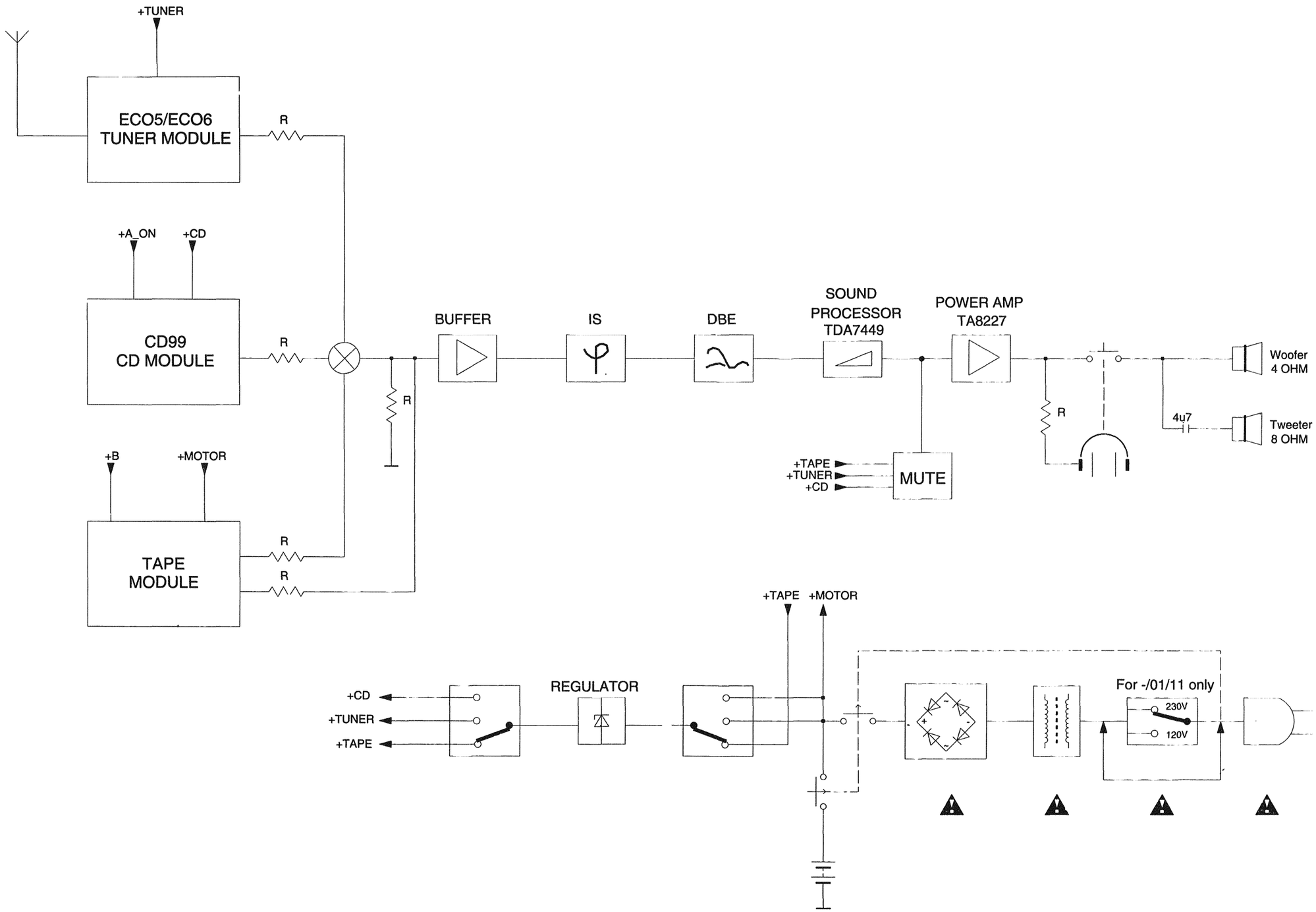
Abbreviations and Pin-description of CD Ics

SERVO PROCESSOR SAA7325H

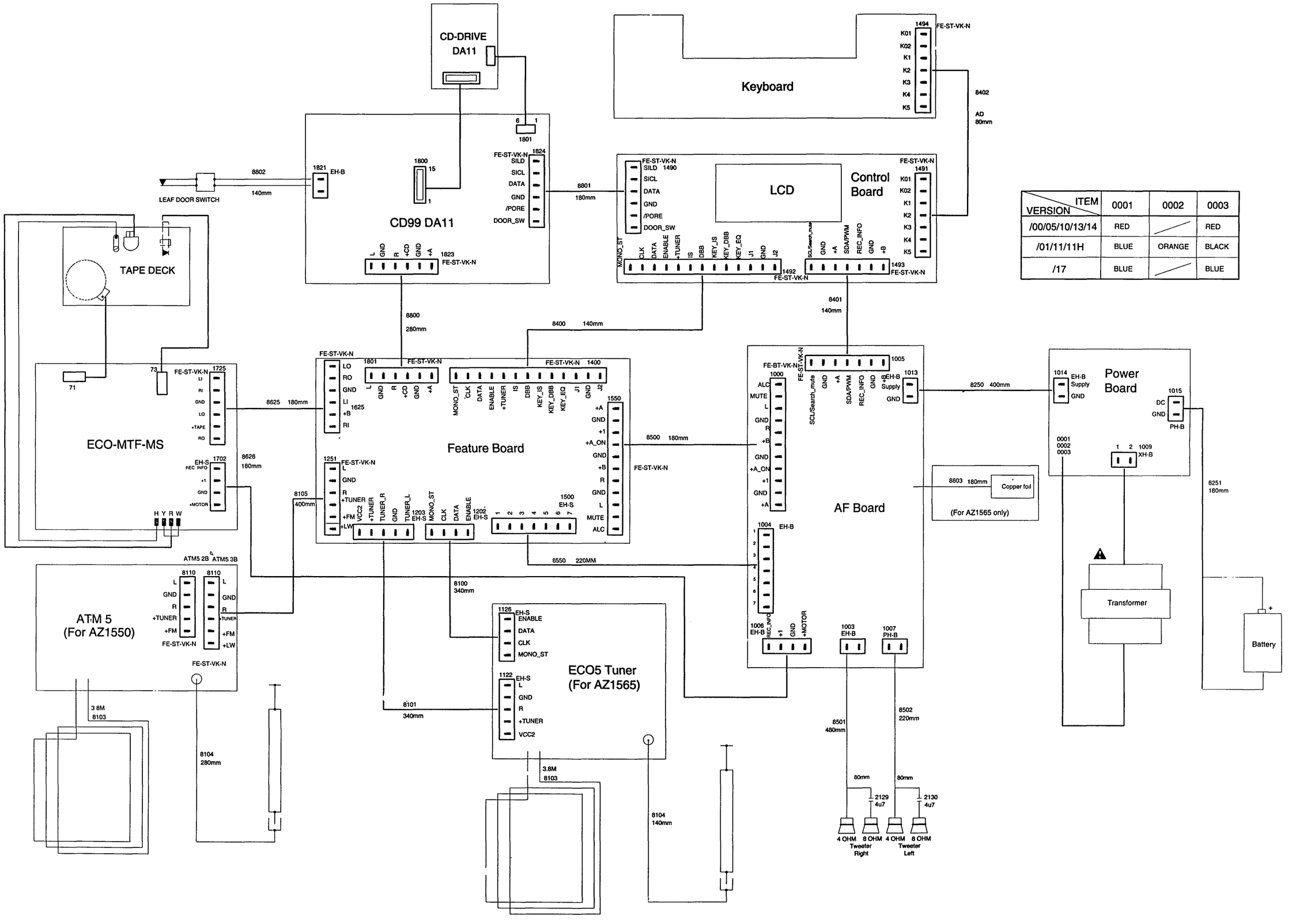
SYMBOL	PIN	DESCRIPTION
RAB	41	microcontroller interface R/$\overline{W}$ and load control line input (4-wire bus mode)
SILD	42	microcontroller interface $\overline{R}$/W and load control line input (4-wire bus mode)
STATUS	43	servo interrupt request line/decoder status register output (open-drain)
TEST3	44	test control input 3; this pin should be tied LOW
RCK	45	subcode clock input
SUB	46	P-to-W subcode bits output (3-state)
SFSY	47	subcode frame sync output (3-state)
SBSY	48	subcode block sync output (3-state)
CL11/4	49	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
V_{SSD2}	50(1)	digital ground 3
DOBM	51	bi-phase mark output (externally buffered; 3-state)
$V_{DDD1(P)}$	52(1)	digital supply voltage 2 for periphery
CFLG	53	correction flag output (open-drain)
RA	54	radial actuator output
FO	55	focus actuator output
SL	56	sledge control output
$V_{DDD2(C)}$	57(1)	digital supply voltage 3 for core
V_{SSD3}	58(1)	digital ground 4
MOTO1	59	motor output 1; versatile (3-state)
MOTO2	60	motor output 2; versatile (3-state)
V4	61	versatile output pin 4
V5	62	versatile output pin 5
V1	63	versatile intput pin 1
LDON	64	laser drive on output (open-drain)

Note : All supply pins must be connected to the same external power supply voltage.

BLOCK DIAGRAM



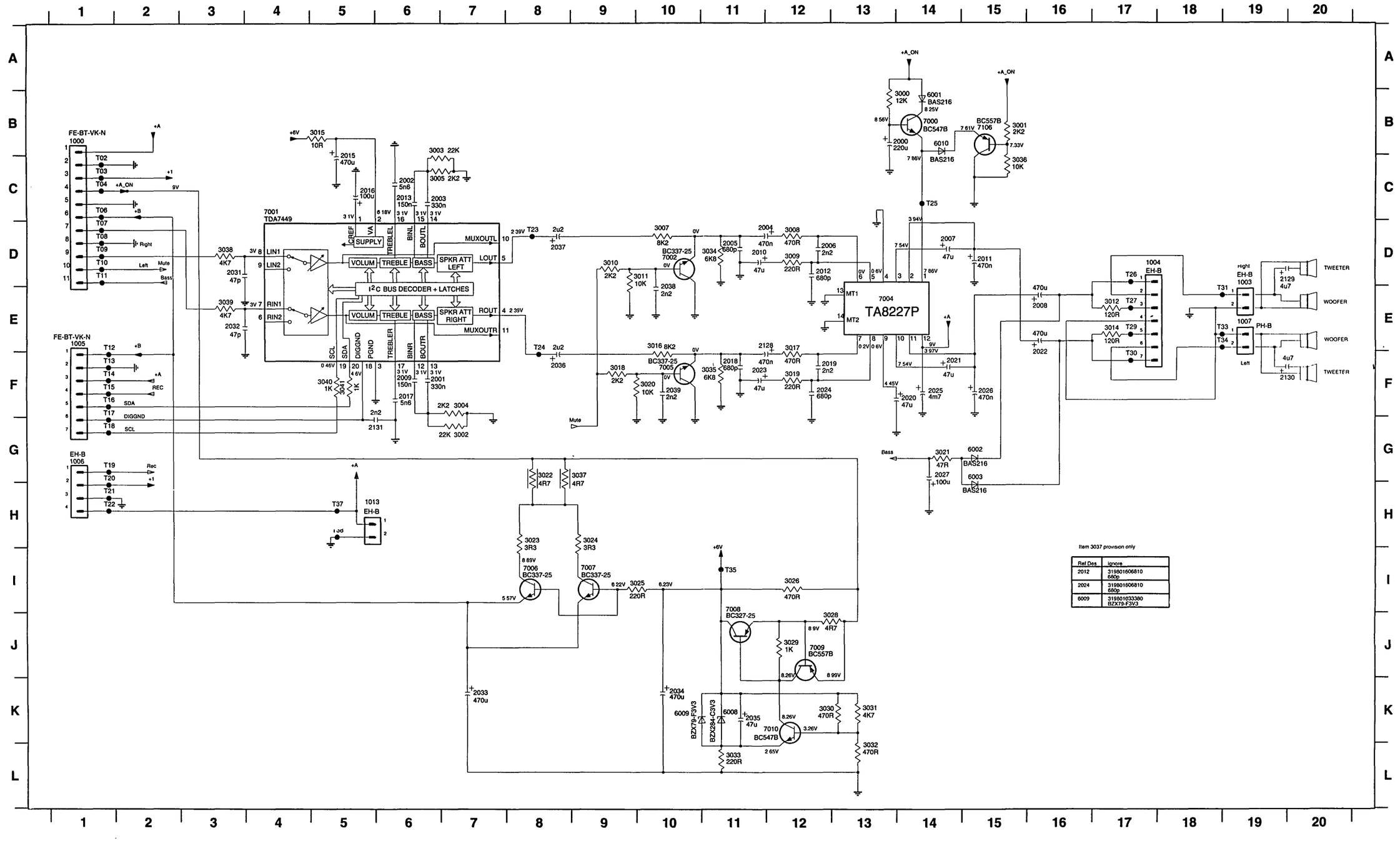
WIRING DIAGRAM



ITEM / VERSION	0001	0002	0003
/00/05/10/13/14	RED		RED
/01/11/11H	BLUE	ORANGE	BLACK
/17	BLUE		BLUE

AF BOARD - CIRCUIT DIAGRAM

T02 C1	T07 D1	T11 D1	T15 F1	T19 G1	T23 D8	T27 E17	T33 E19	T38 H5	1005 E1	2000 B14	2004 D11	2008 E16	2012 D12	2017 F6	2021 F14	2025 F14	2032 E3	2036 F8	2128 E11	3000 B14	3004 F7	3009 D12	3014 E17	3018 F9	3022 G8	3026 I12	3031 K13	3035 F11	3039 E3	6002 G15	6010 B14	7004 E13	7008 I11
T03 C1	T08 D1	T12 E1	T16 F1	T20 G1	T24 E8	T29 E17	T34 E19	1000 B1	1006 G1	2001 F6	2005 D11	2009 F6	2013 C6	2018 F11	2022 E16	2026 F15	2033 K7	2037 D8	2129 D19	3001 B15	3005 C6	3010 D9	3015 B5	3019 F12	3023 H8	3028 J12	3032 K13	3036 C15	3040 F5	6003 G15	7000 B14	7005 F10	7009 J12
T04 C1	T09 D1	T13 F1	T17 F1	T21 H1	T25 C14	T30 F17	T35 I11	1003 D19	1007 E19	2002 C6	2006 D12	2010 D11	2015 C5	2019 F12	2023 F11	2027 G14	2034 K10	2038 E10	2130 F19	3002 G7	3007 D10	3011 D10	3016 E10	3020 F10	3024 H9	3029 J12	3033 L11	3037 G9	3041 F5	6008 K11	7001 C4	7006 I8	7010 K12
T06 C1	T10 D1	T14 F1	T18 G1	T22 H1	T26 D17	T31 E19	T37 H5	1004 D17	1013 H6	2003 C6	2007 D14	2011 D15	2016 C5	2020 F14	2024 F12	2031 D3	2035 K11	2039 F10	2131 G5	3003 B6	3008 D12	3012 E17	3017 E12	3021 G14	3025 I10	3030 K12	3034 D11	3038 D3	6001 B14	6009 K10	7002 D10	7007 I9	7106 B15

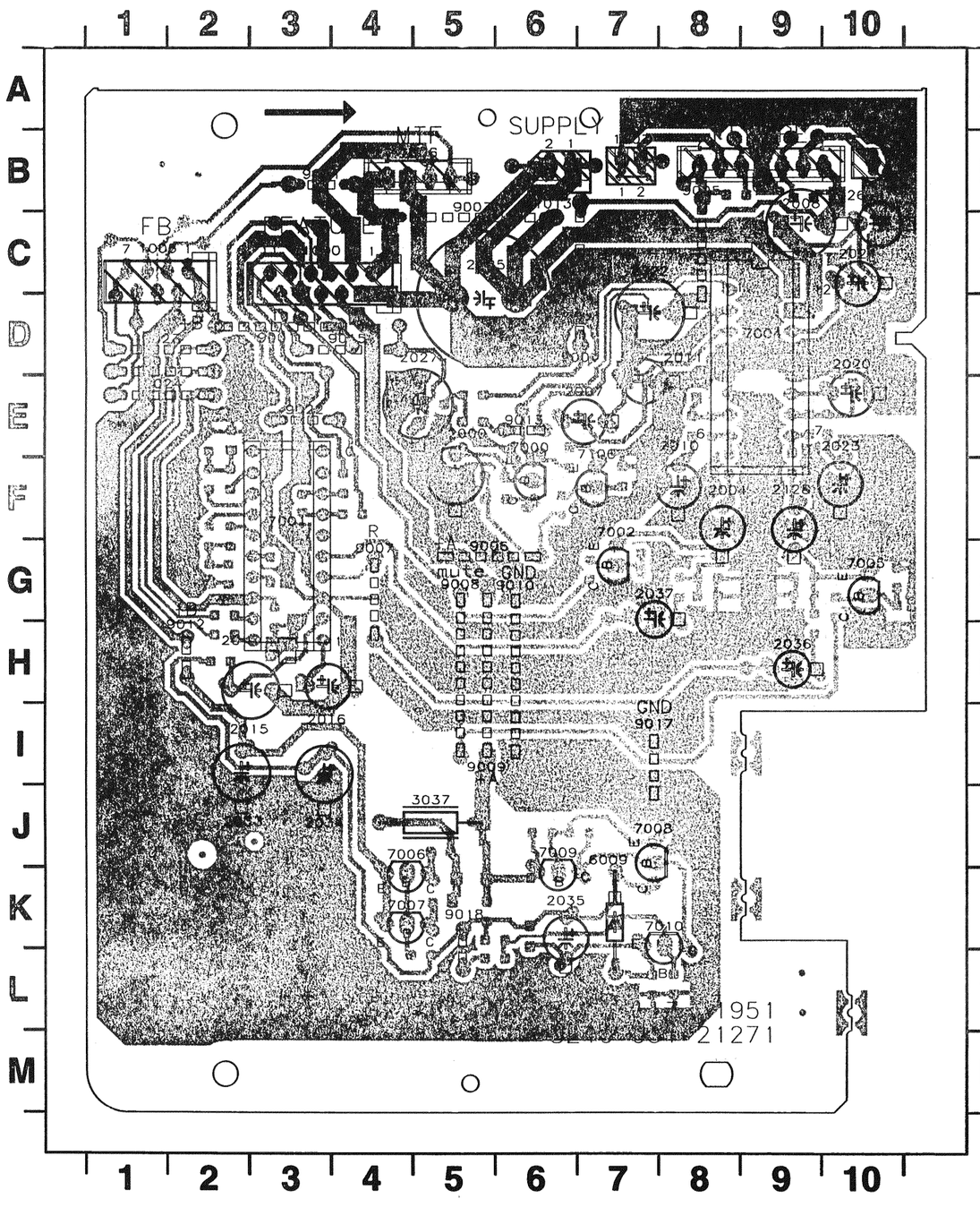


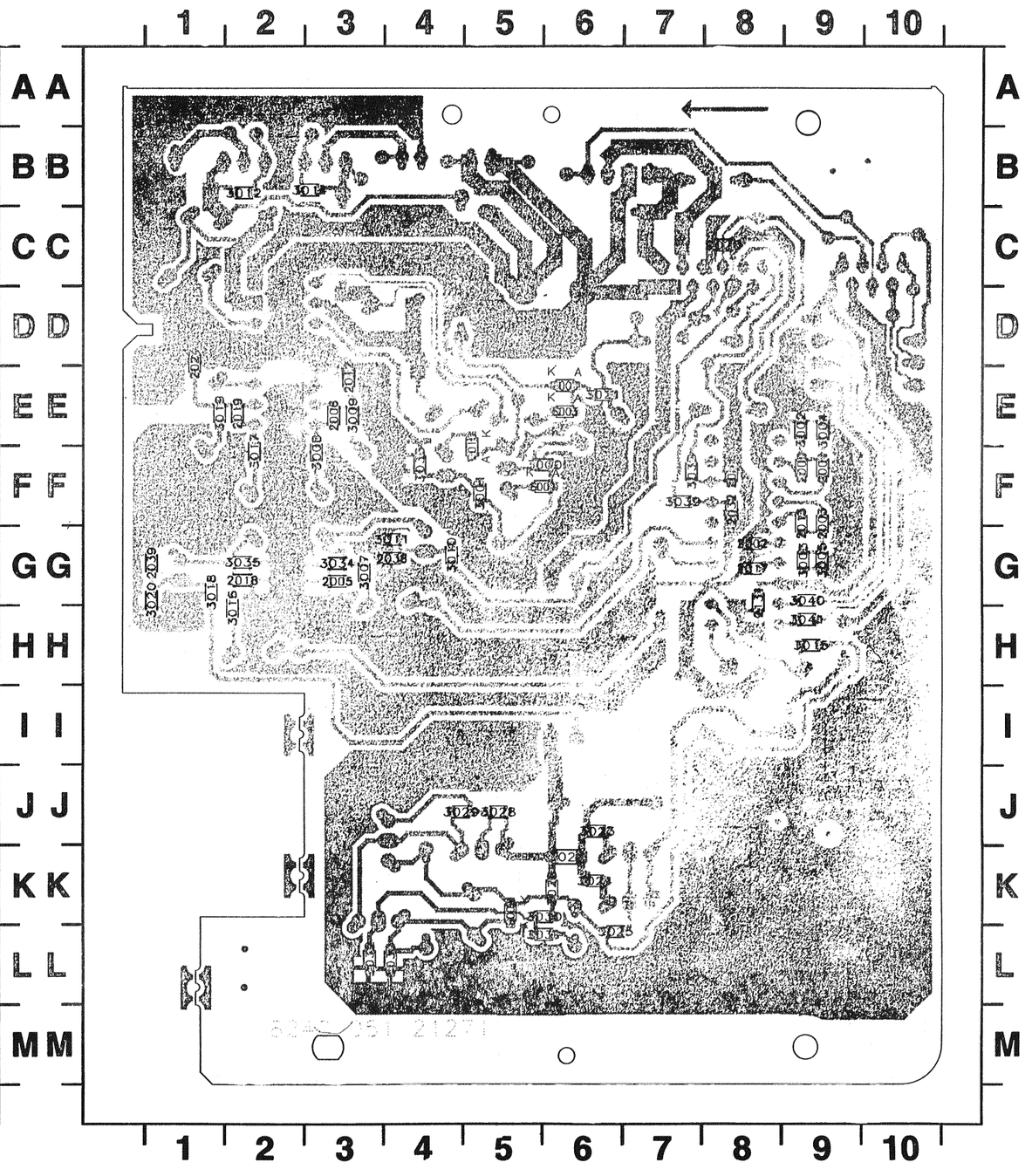
PCS 99 423

AF BOARD - LAYOUT DIAGRAM

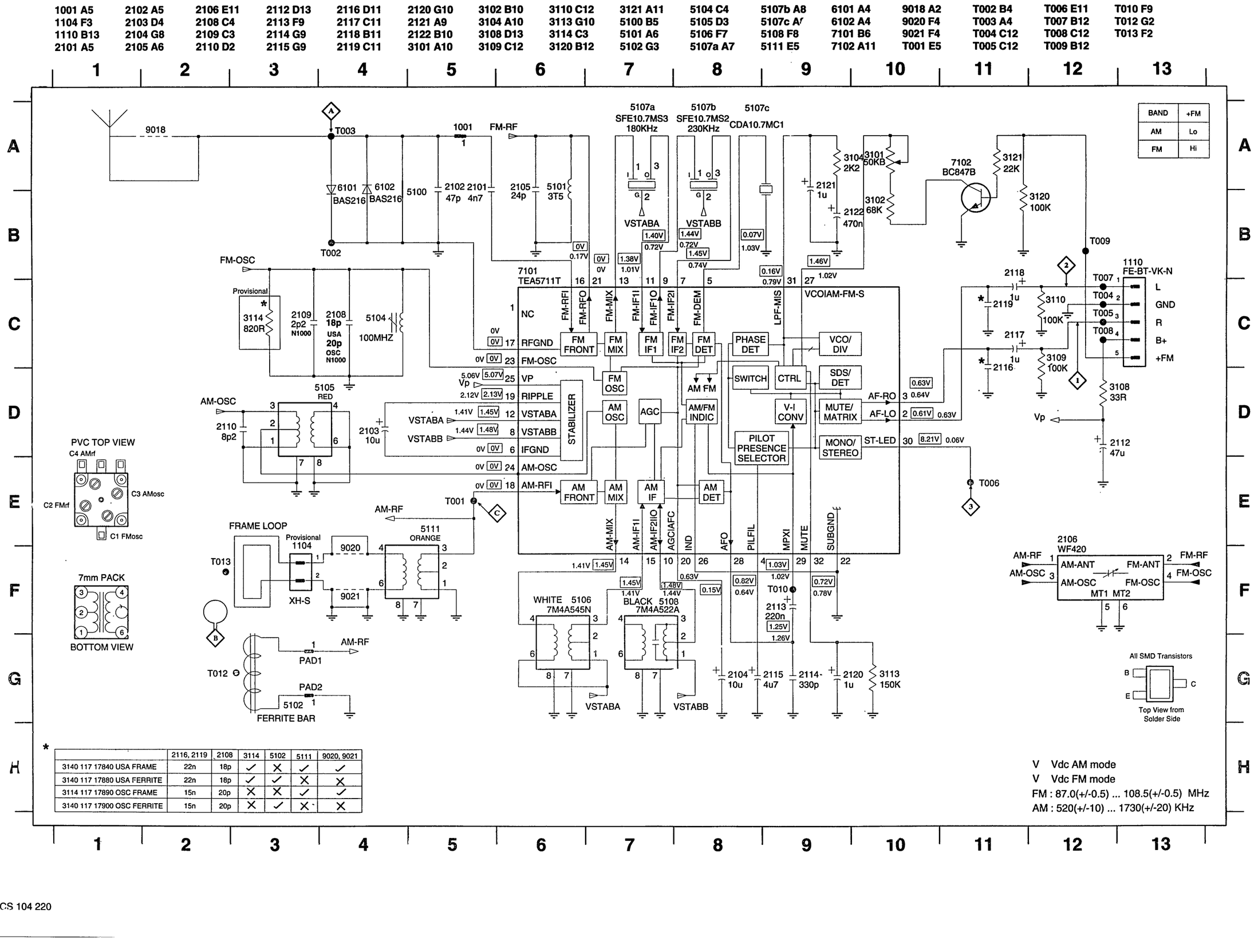
1000	C3	2007	E7	2023	E10	2128	F9	7007	K4	9006	G5	9017	I7	2001	F9	2017	G8	2131	G8
1003	A10	2008	B9	2025	C5	3037	J5	7008	J7	9007	G4	9018	K5	2002	G8	2018	G2	3000	F6
1004	B9	2010	E8	2026	B10	6009	J7	7009	J6	9008	G5	9021	B3	2003	F9	2019	E2	3001	F5
1005	C1	2011	D8	2027	D5	7000	E6	7010	K8	9009	I5	9022	E3	2005	G3	2024	D1	3002	E9
1006	B5	2015	I2	2033	J2	7001	F3	7106	E7	9010	G6	9023	D1	2006	E3	2031	F8	3003	G9
1007	B7	2016	I3	2034	J3	7002	F7	9001	D3	9011	D1	9024	E1	2009	F9	2032	F8	3004	E9
1013	B6	2020	D10	2035	K6	7004	D9	9003	B5	9012	H2			2012	E3	2038	G4	3005	G9
2000	E5	2021	C10	2036	H9	7005	G10	9004	D7	9013	E6			2013	F9	2039	G1	3007	G3
2004	F8	2022	C7	2037	G7	7006	J4	9005	B8	9015	D4								

3008	F3	3017	F2	3025	L6	3034	G3	6002	E6
3009	E3	3018	G1	3026	K6	3035	G2	6003	E6
3010	G4	3019	E1	3028	J5	3036	F4	6008	K5
3011	G4	3020	G1	3029	J4	3038	F7	6010	F5
3012	B2	3021	E6	3030	K6	3039	F7	9020	
3014	B3	3022	K6	3031	L6	3040	G9		
3015	H9	3023	J6	3032	L3	3041	H9		
3016	H2	3024	K6	3033	L4	6001	F5		





TUNER BOARD ATM5 (FM/MW) - CIRCUIT DIAGRAM

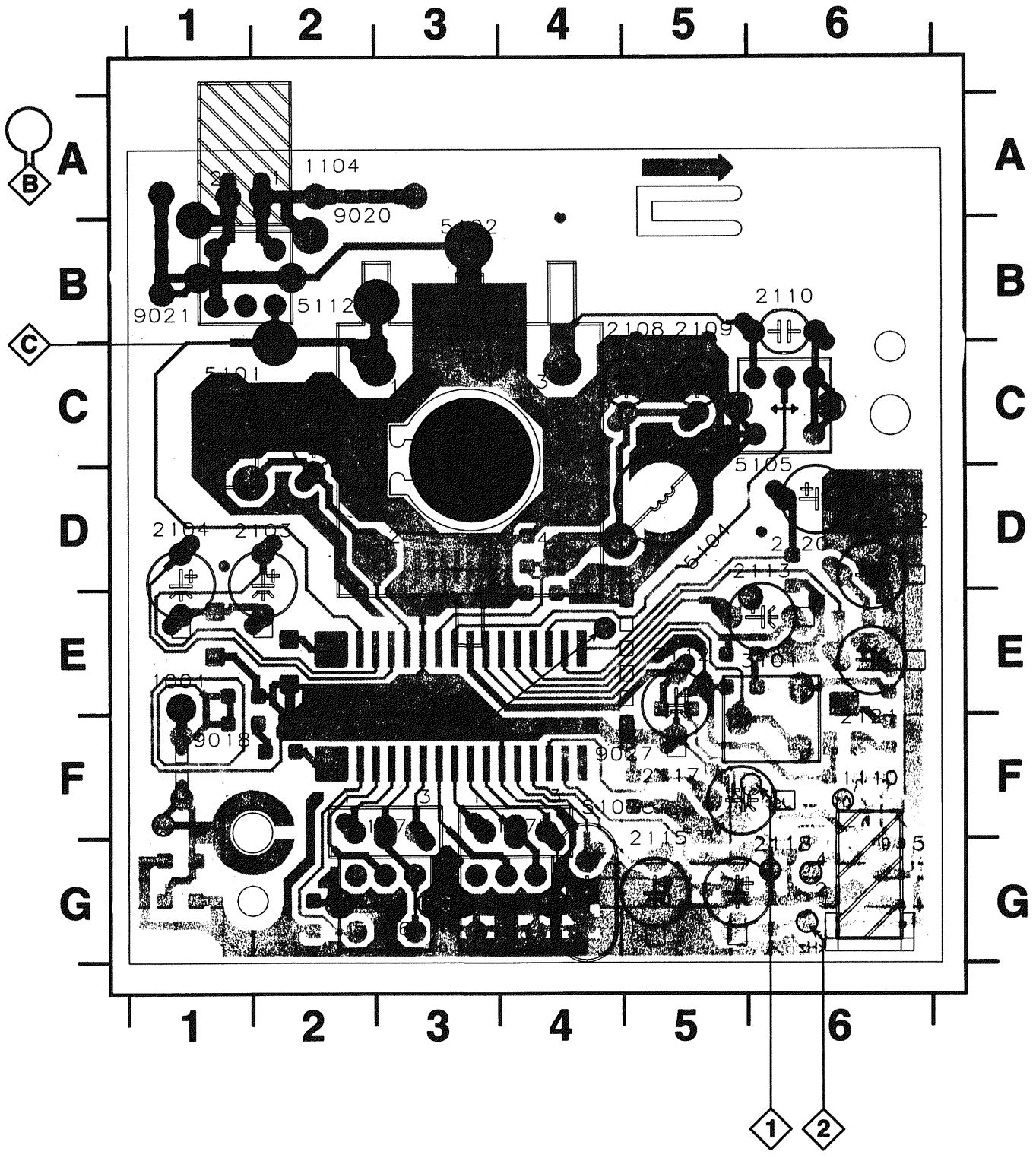


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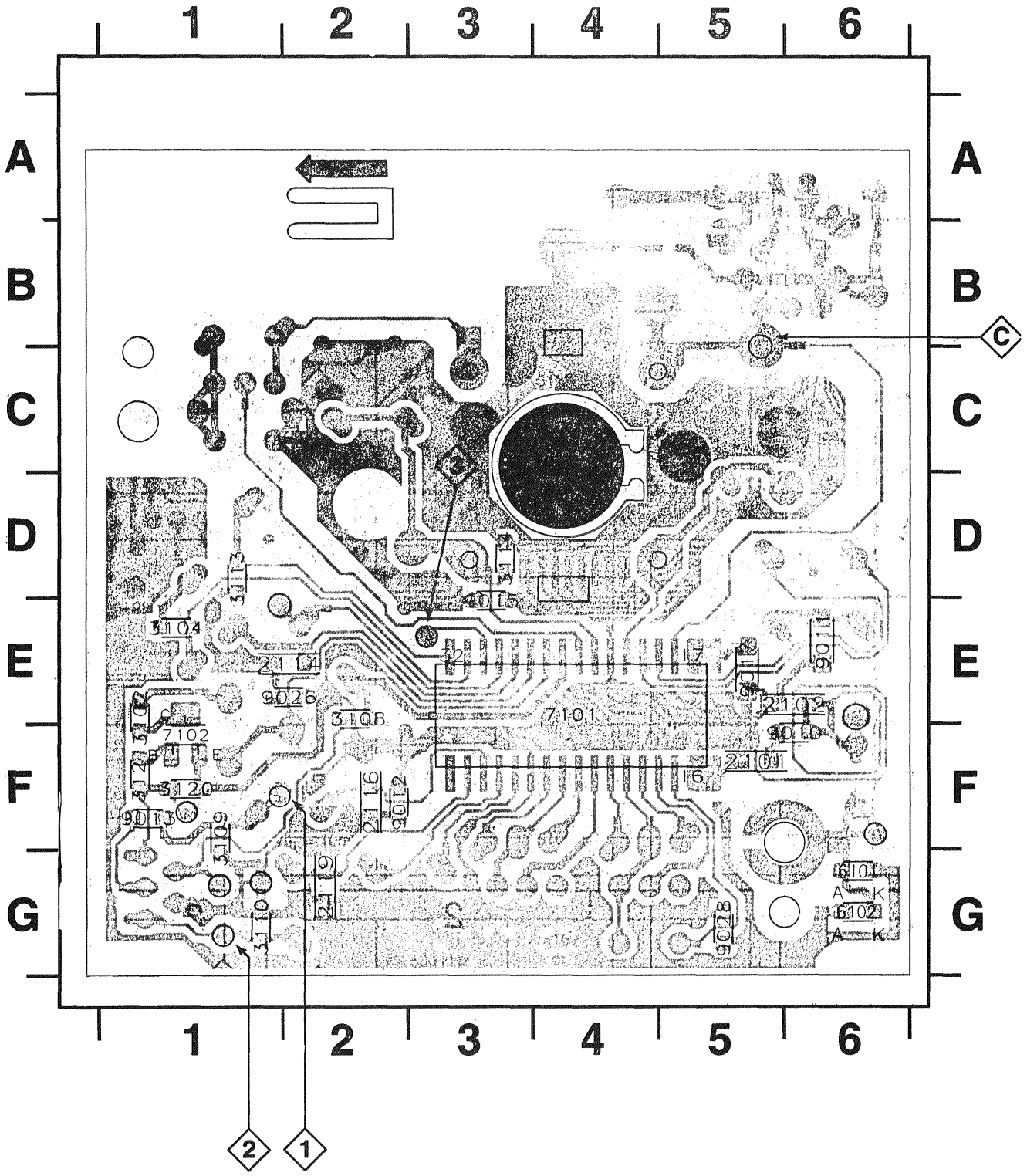
	2116, 2119	2108	3114	5102	5111	9020, 9021
3140 117 17840 USA FRAME	22n	18p	✓	X	✓	✓
3140 117 17880 USA FERRITE	22n	18p	✓	✓	X	X
3114 117 17890 OSC FRAME	15n	20p	X	X	✓	✓
3140 117 17900 OSC FERRITE	15n	20p	X	✓	X	X

TUNER BOARD ATM5 (FM/MW) - LAYOUT DIAGRAM

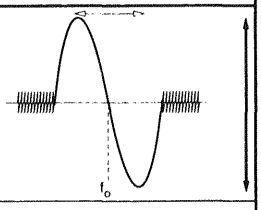
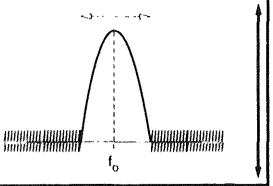
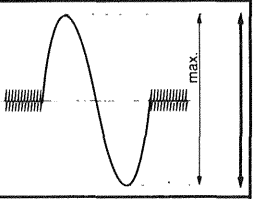
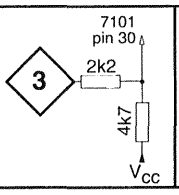
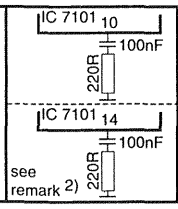
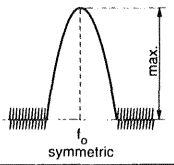
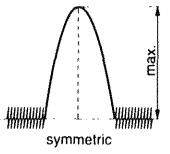
1001 E1	2106 C3	2115 F5	3101 E6	5107a F3	9018 F1
1104 A2	2108 B5	2117 F5	5101 C1	5107b F4	9020 A2
1110 F6	2109 B5	2118 G6	5102 B3	5107c F4	9021 B1
2103 D2	2110 B6	2120 D6	5104 D5	5108 G4	9027 F4
2104 D1	2112 E5	2121 F6	5105 C6	5111 B1	
2105 C2	2113 D6	2122 D6	5106 G3	5112 B2	



2101 F5	3102 E1	3113 D1	6102 G6	9012 F2	9028 G5
2102 E6	3104 E1	3114 D3	7101 E4	9013 F1	
2114 E2	3108 E2	3120 F1	7102 F1	9015 E3	
2116 F2	3109 F1	3121 F1	9010 F6	9017 E5	
2119 G2	3110 G1	6101 G6	9011 E6	9026 E2	



TUNER ADJUSTMENT TABLE (ATM5 FM/AM - versions with AM-frame aerial)

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz	87,35 MHz 108,25 MHz	A Δf = ±500kHz V_{RF} = 100µV	lower band end upper band end	5104 2106 C1	1 or 2	
MW 525 - 1607 kHz (530 - 1710 kHz) [1]	512 kHz (520 kHz) 1635 kHz (1730 kHz)	C Δf = ±30kHz V_{RF} = 100µV	lower band end upper band end	5105 2106 C3	1 or 2	
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz 108 MHz	A Δf = ±500kHz V_{RF} = 10µV	87,5 MHz 108 MHz	5101 2106 C2	1 or 2	
VCO						
FM	98 MHz	A continuous wave V_{RF} = 1 mV	98 MHz	3101	3	
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C Δf = ±15kHz V_{RF} = 10mV		5106 5108	1 or 2	
AM -RF						
MW	560 kHz 1500 kHz	B Δf = ±30kHz V_{RF} as low as possible	560 kHz 1500 kHz	5111 2106 C4	1 or 2	

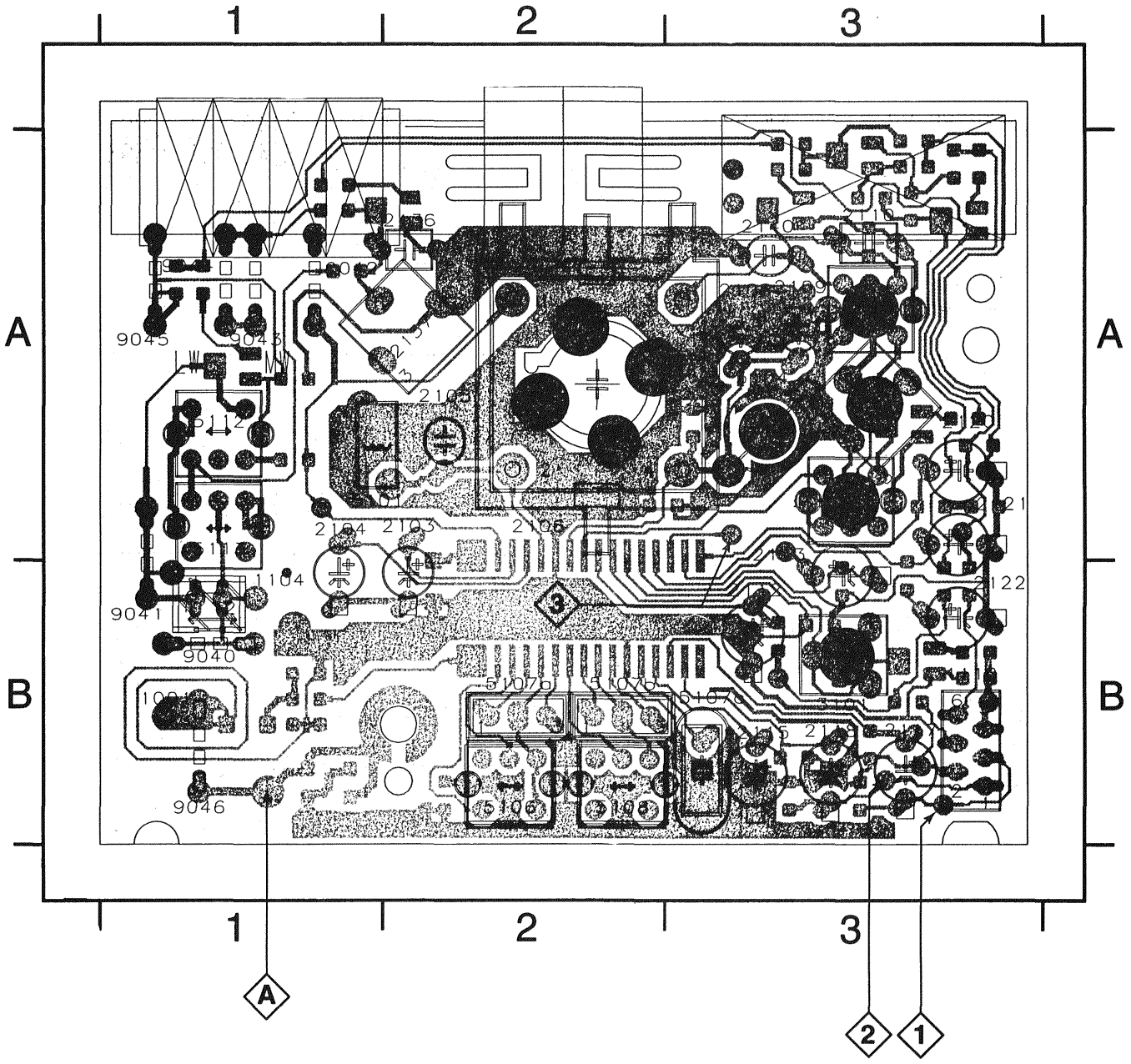
repeat

[1] for USA /17

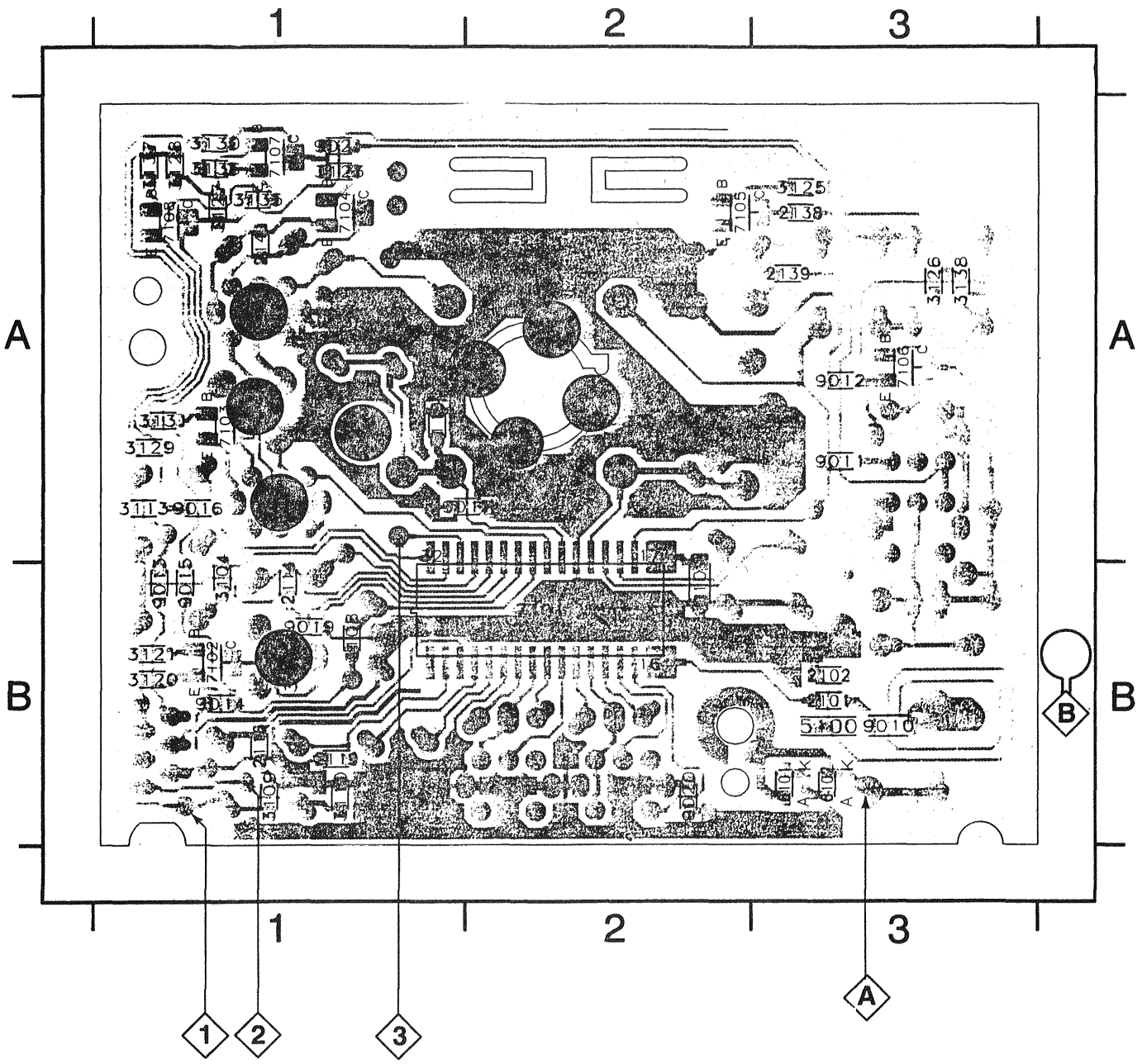
[2] RC-network serves for damping the IF-filter while adjusting the other one.

TUNER BOARD ATM5 (FM/MW/LW) - LAYOUT DIAGRAM

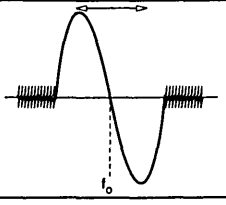
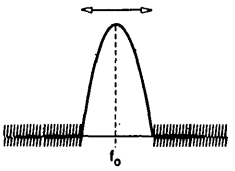
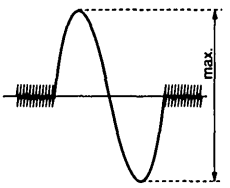
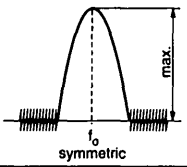
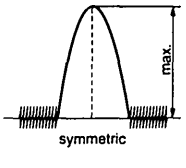
1001	B1	2105	A2	2112	B3	2120	A3	2137	A2	5105	A3	5108	B2	9041	B1	9046	B1
1104	B1	2106	A2	2113	A3	2121	A3	2140	A3	5106	B2	5109	A3	9042	A1		
1110	B3	2108	A3	2115	B3	2122	B3	3101	B3	5107a	B2	5112	A1	9043	A1		
2103	A2	2109	A3	2117	B3	2135	A3	5101	A1	5107b	B2	5113	A1	9044	A1		
2104	A1	2110	A3	2118	B3	2136	A2	5104	A3	5107c	B3	9040	B1	9045	A1		



2101	B3	2138	A3	3108	B1	3120	B1	3127	A1	3135	A1	6101	B3	7104	A1	9010	B3	9015	B1	9021	A1
2102	B3	2139	A3	3109	B1	3121	B1	3128	A1	3136	A1	6102	B3	7105	A2	9011	A3	9016	A1	9107	B2
2114	B1	2141	A1	3110	B1	3123	A1	3129	A1	3137	A1	7101	B2	7106	A3	9012	A3	9017	A2		
2116	B1	3102	B1	3113	A1	3125	A3	3130	A1	3138	A3	7102	B1	7107	A1	9013	B1	9019	B1		
2119	B1	3104	B1	3114	A1	3126	A3	3131	A1	5100	B3	7103	A1	7108	A1	9014	B1	9020	B2		



TUNER ADJUSTMENT TABLE (ATM5 FM/LW/MW- versions with AM-frame aerial)

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz (65 - 108 MHz) [1]	87,35 MHz (64,7 MHz)	A Δf = ±500kHz V_{RF} = 100µV	lower band end	5104	1 or 2	
	108,25 MHz		upper band end	2106 C1		
MW 525 - 1607 kHz (530 - 1710 kHz) [2]	512 kHz (520 kHz)	B Δf = ±30kHz V_{RF} = 100µV	lower band end	5109	1 or 2	
	1635 kHz (1730 kHz)		upper band end	2106 C3		
LW [3] 148,5 - 284 kHz	147 kHz		lower band end	5105		
	291 kHz		upper band end	2135		
FM - RF						
FM 87,5 - 108 MHz (65 - 108 MHz) [1]	87,5 MHz (65 MHz)	A Δf = ±500kHz V_{RF} = 10µV	87,5 MHz (65 MHz)	5101	1 or 2	
	108 MHz		108 MHz	2106 C2		
VCO						
FM	98 MHz	A continuous wave V_{RF} = 1 mV	98 MHz	3101	3	152 ±1 kHz
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	B Δf = ±15kHz V_{RF} = 10mV	IC 7101 10 — 100nF — 220R IC 7101 14 — 100nF — 220R see remark [4]	5106 5108	1 or 2	
AM -RF						
MW	560 kHz	B Δf = ±30kHz V_{RF} as low as possible	560 kHz	5102 or 5112	1 or 2	
	1500 kHz		1500 kHz	2106 C4		
LW [3]	170 kHz		170 kHz	5103 or 5113		
	260 kHz		260 kHz	2137		

repeat

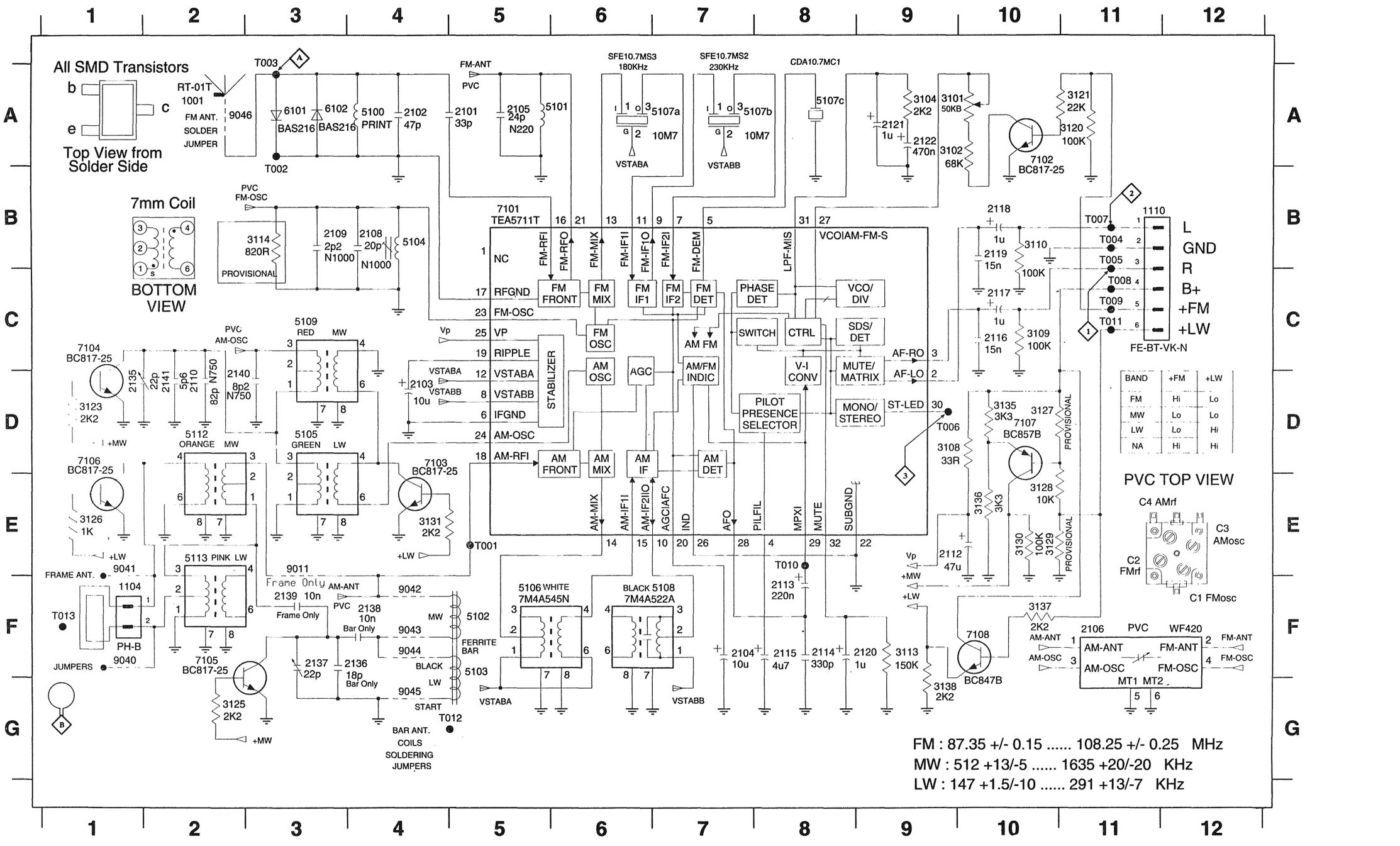
[1] for East Europe /14 [2] for USA /17 [3] LW not for all versions

[4] RC-network serves for damping the IF-filter while adjusting the other one.

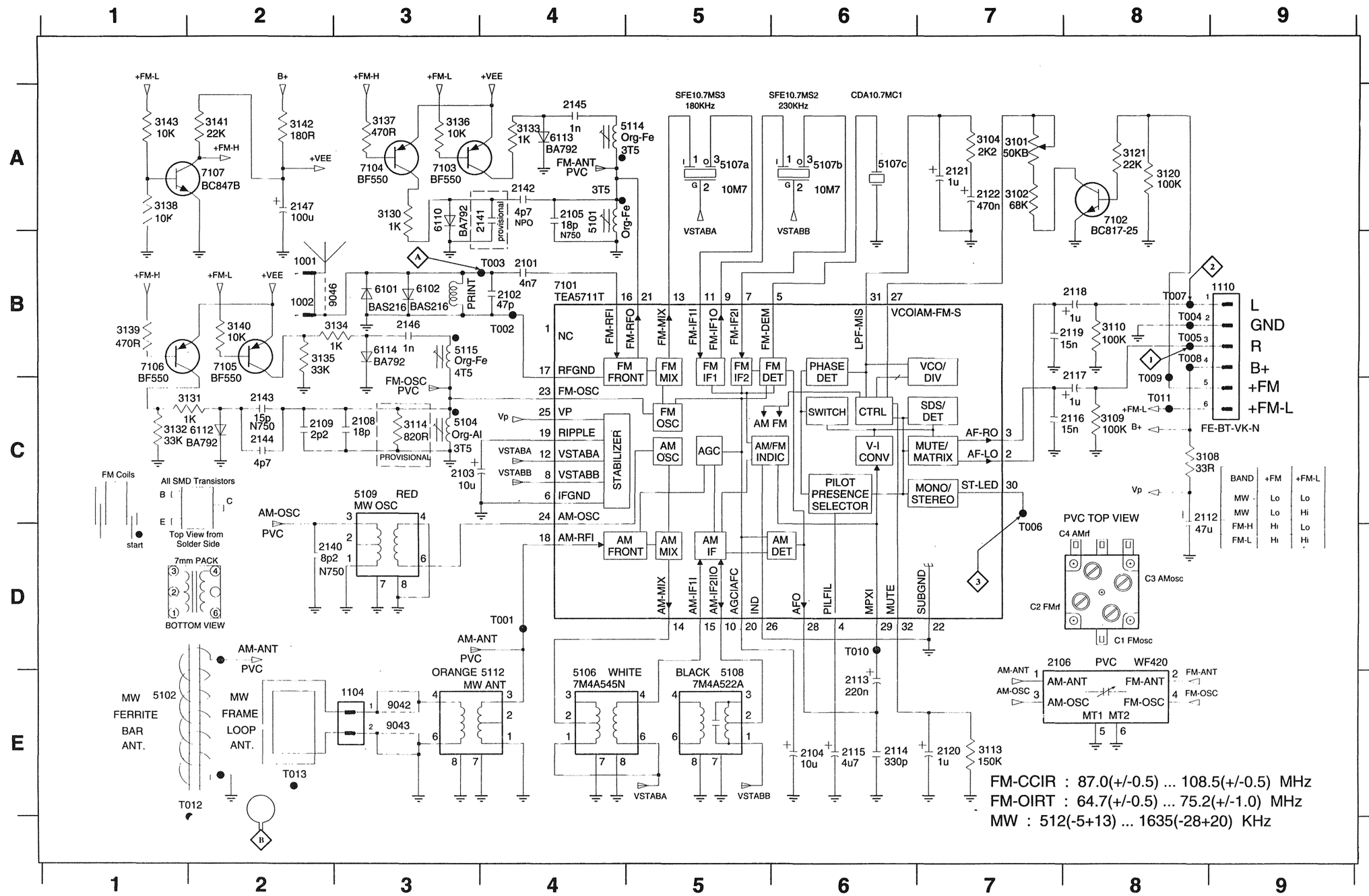
TUNER BOARD ATM5 (FM/MW/LW) - CIRCUIT DIAGRAM

1001 A2	2104 F7	2112 E9	2118 B10	2136 F4	3101 A9	3113 F9	3126 E1	3135 D10	5104 B4	5108 F7	7101 B5	7107 D10	9043 F4	T003 A3	T009 C11
1104 F1	2105 A5	2113 F8	2119 B10	2137 F3	3102 A9	3114 B3	3127 D10	3136 E10	5105 D3	5109 C3	7102 A10	7108 F10	9044 F4	T004 B11	T010 E8
1110 B11	2106 F11	2114 F8	2120 F9	2138 F4	3104 A9	3120 A11	3128 E10	3137 F10	5106 F5	5112 D2	7103 D4	9011 E3	9045 G4	T005 B11	T011 C11
2101 A5	2108 B4	2115 F8	2121 A9	2139 F3	3108 D9	3121 A11	3129 E10	3138 G9	5107a A6	5113 E2	7104 C1	9040 F1	9046 A2	T006 D9	T012 G5
2102 A4	2109 B3	2116 C10	2122 A9	2140 D2	3109 C10	3123 D1	3130 E10	5100 A4	5107b A7	6101 A3	7105 F2	9041 E1	T001 E5	T007 B11	T013 F1
2103 D4	2110 D2	2117 C10	2135 D1	2141 D2	3110 B10	3125 G2	3131 E4	5101 A6	5107c A8	6102 A3	7106 D1	9042 F4	T002 B3	T008 C11	

3140 117 17850 FRAME ONLY		3140 117 17910 BAR ONLY
1104	7106	2136
2139	9040	2138
3126	9041	9042
5112	9011	9043
5113		9044
		9045



TUNER BOARD ATM5 (FM1/FM2/MW) - CIRCUIT DIAGRAM



3140 117 17860 FRAME ONLY	3140 117 17920 FERRITE ONLY
1104	5102
5112	
9042	
9043	

1001 B2
1002 B2
1104 E3
1110 B9
2101 B4
2102 B4
2103 C3
2104 E6
2105 A4
2106 D7
2108 C3
2109 C2
2112 C8
2113 E6
2114 E6
2115 E6
2116 C8
2117 B8
2118 B8
2119 B8
2120 E7
2121 A7
2122 A7
2140 D2
2141 A4
2142 A4
2143 C2
2144 C2
2145 A4
2146 B3
2147 A2
3101 A7
3102 A7
3104 A7
3108 C8
3109 C8
3110 B8
3113 E7
3114 C3
3120 A8
3121 A8
3130 A3
3131 C2
3132 C1
3133 A4
3134 B3
3135 B2
3136 A3
3137 A3
3138 A1
3139 B1
3140 B2
3141 A2
3142 A2
3143 A1
5101 A4
5102 E1
5104 C3
5106 E4
5107a A5
5107b A6
5107c A6
5108 E5
5109 C3
5112 E4
5114 A5
5115 B3
6101 B3
6102 B3
6110 A3
6112 C2
6113 A4
6114 B3
7101 B4
7102 A8
7103 A3
7104 A3
7105 B2
7106 B1
7107 A2
9042 E3
9043 E3
9046 B2
T001 D4
T002 B4
T003 B4
T004 B8
T005 B8
T006 D7
T007 B8
T008 B8
T009 C8
T010 D6
T011 C8
T012 E2
T013 E2

TUNER ADJUSTMENT TABLE (ATM3 FM/FM$_{OIRT}$/MW- versions with AM-frame/ferrite aerial)

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM **step 1** 87,5 - 108 MHz	87,00 MHz	A	lower band end	5104 [1] (pre-adjust)	1 or 2	
	108,50 MHz		upper band end	2106 C1		
step 2 65,2 - 75,1 MHz	64,70 MHz		lower band end	5104		
	75,00 MHz	$\Delta f = \pm 500$kHz $V_{RF} = 100\mu V$	upper band end	check if 75 ±0,8 MHz		
step 3 87,5 - 108 MHz	87,00 MHz		lower band end	5115		
	108,50		upper band end	check if 108,5±0,3 MHz		
MW 525 - 1607 kHz	516 kHz	B	lower band end	5109	1 or 2	
	1620 kHz	$\Delta f = \pm 30$kHz $V_{RF} = 100\mu V$	upper band end	2106 C3		
FM - RF						
step 1 87,5 - 108 MHz	87,00 MHz	A	87,00 MHz	5101 [2] (pre-adjust)	1 or 2	
	108,50 MHz		108,50 MHz	2106 C2		
step 2 64,7 - 75 MHz	70,00 MHz	$\Delta f = \pm 500$kHz $V_{RF} = 10\mu V$	70,00 MHz	5101		
step 3 87,5 - 108 MHz	87,00 MHz		87,00 MHz	5114		
	108,50 MHz		108,50 MHz	check if max.		
VCO						
FM	98 MHz	A continuous wave $V_{RF} = 1$ mV	98 MHz	3101	3 (7101 pin 30, 2k2, 4k7, V_{cc})	152 ±1 kHz [3]
AM - IF						
MW	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	B $\Delta f = \pm 15$kHz $V_{RF} = 10$mV	IC 7101 10, 100nF, 220R	5106	1 or 2	max., f_o symmetric
			IC 7101 14, 100nF, 220R see remark [4]	5108		
AM -RF [5]						
MW	550 kHz	B $\Delta f = +30$kHz V_{RF} as low as possible	550 kHz	5112	1 or 2	max., symmetric
	1500 kHz		1500 kHz	2106 C4		

repeat

[1] If necessary, pre-adjust 5115 first.

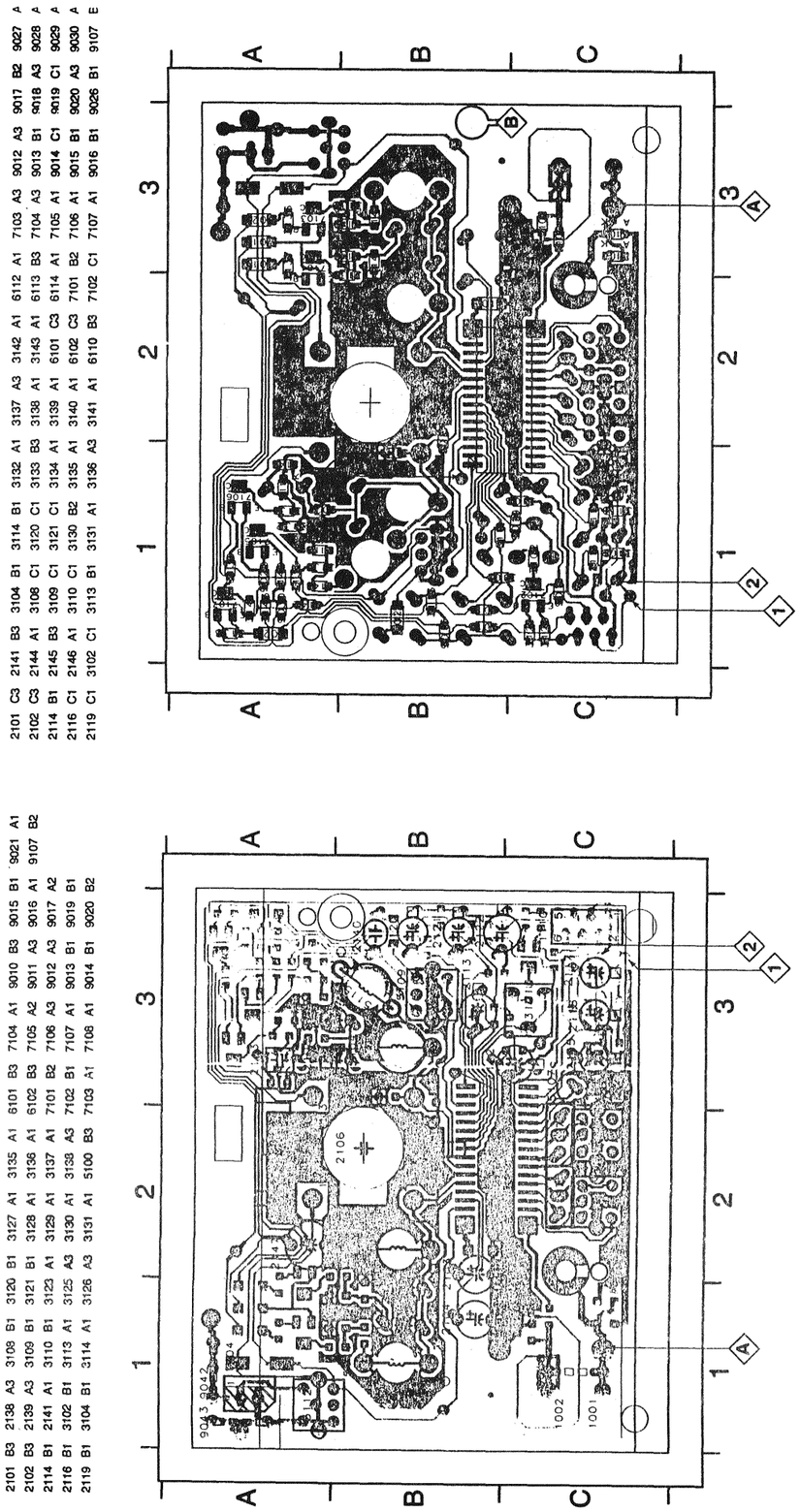
[2] If necessary, pre-adjust 5114 first.

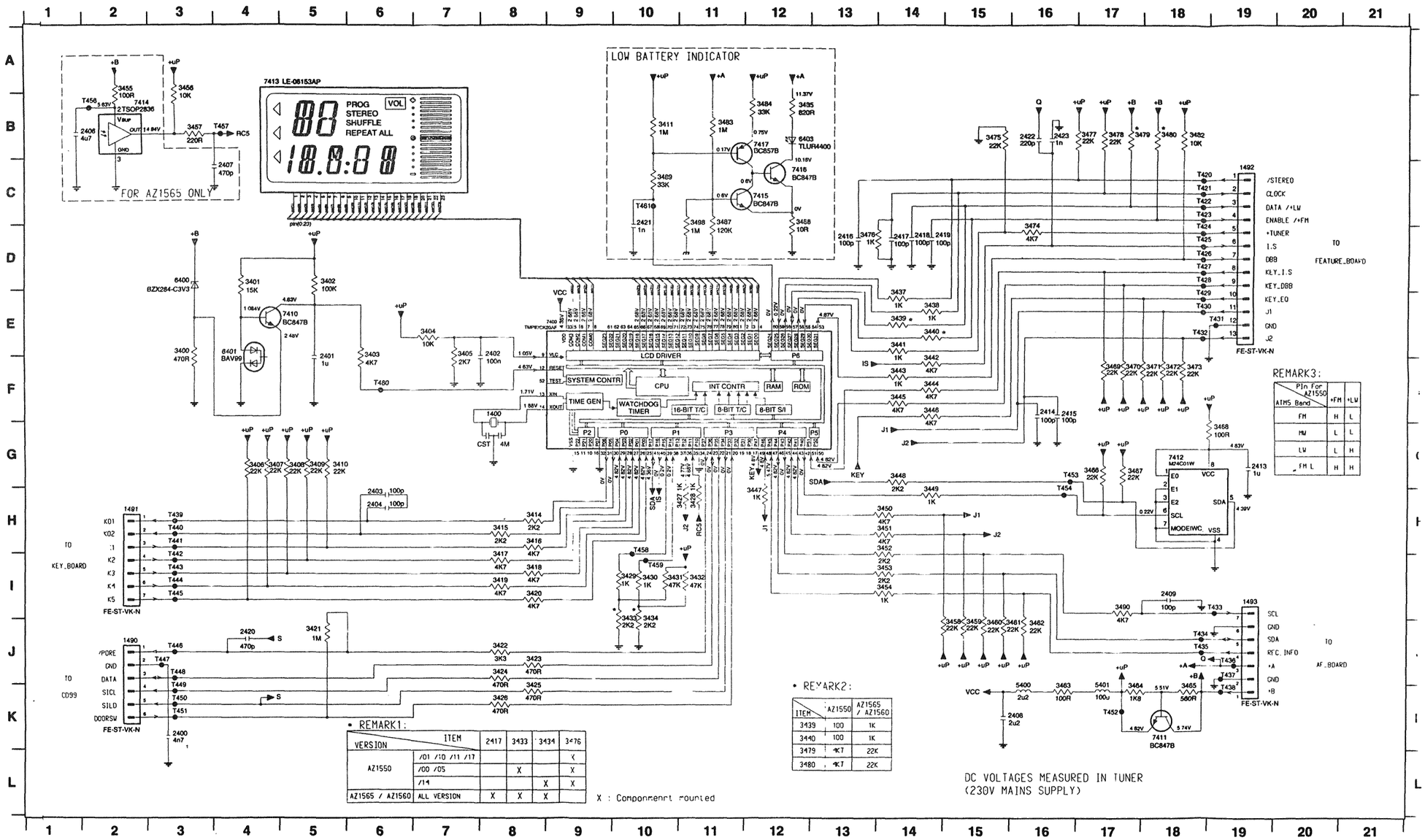
[3] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[4] RC-network serves for damping the IF-filter while adjusting the other one.

[5] For MW adjustments the original frame aerial has to be used.

TUNER BOARD ATM5 (FM1/FM2/MW) - LAYOUT DIAGRAM





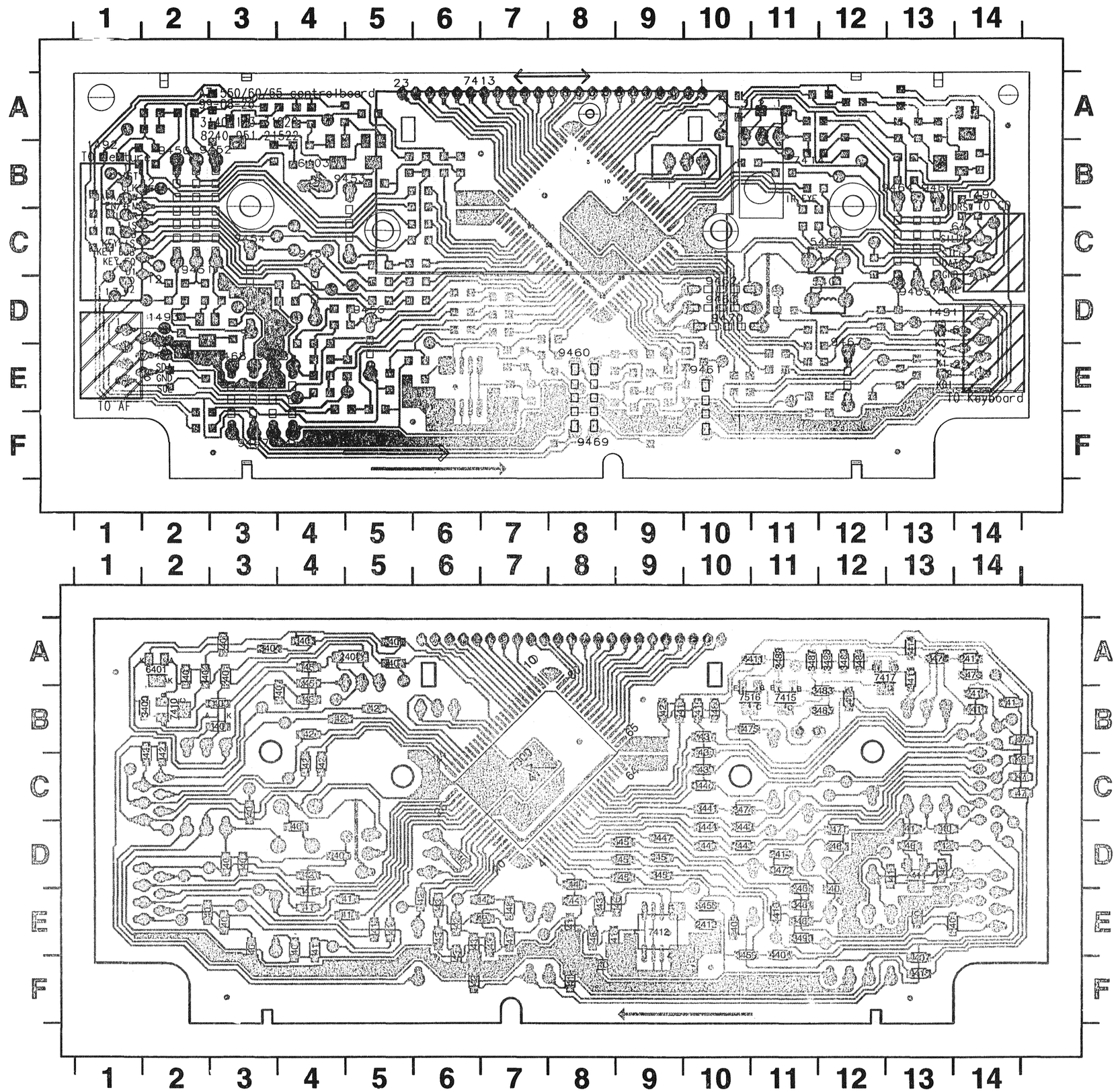
1400 F8	3429 I10	3484 B12	T451 K3
1490 J2	3430 I10	3485 B12	T452 K17
1491 H2	3431 I10	3487 C11	T453 G16
1492 C19	3432 I11	3488 C12	T454 H16
1493 I19	3433 J10	3489 C10	T456 B2
2400 K3	3434 J10	3490 I17	T457 B4
2401 F5	3437 E14	3498 C11	T458 H10
2402 E8	3438 E14	5400 K16	T459 I10
2403 H6	3439 E14	5401 K17	T460 F6
2404 H6	3440 E14	6400 D3	T461 C10
2406 B2	3441 E14	6401 E4	
2407 C4	3442 F14	6403 B12	
2408 K16	3443 F14	7400 E9	
2409 I18	3444 F14	7410 E5	
2413 G19	3445 F14	7411 K18	
2414 F16	3446 F14	7412 G18	
2415 F16	3447 H12	7413 A4	
2416 D13	3448 G14	7414 B2	
2417 D14	3449 H14	7415 C12	
2418 D14	3450 H14	7416 C12	
2419 D14	3451 H14	7417 B12	
2420 J4	3452 H14	T420 C18	
2421 C10	3453 I14	T421 C18	
2422 B16	3454 I14	T422 C18	
2423 B16	3455 A2	T423 C18	
3400 E3	3456 A3	T424 D18	
3401 D4	3457 B3	T425 D18	
3402 D5	3458 J15	T426 D18	
3403 E6	3459 J15	T427 D18	
3404 E7	3460 J15	T428 D18	
3405 E7	3461 J16	T429 E18	
3408 G4	3462 J16	T430 F18	
3407 G4	3463 K16	T431 E19	
3408 G5	3464 K17	T432 E18	
3409 G5	3465 K16	T433 I19	
3410 G5	3466 G17	T434 J18	
3411 B10	3467 G17	T435 J18	
3414 H8	3468 G19	T436 J19	
3415 H8	3469 F17	T437 J19	
3418 H8	3470 F17	T438 K19	
3417 I8	3471 F18	T439 H3	
3418 I8	3472 F18	T440 H3	
3419 I8	3473 F18	T441 H3	
3420 I8	3474 D16	T442 I3	
3421 J5	3475 B15	T443 I3	
3422 J8	3476 D13	T444 I3	
3423 J8	3477 B17	T445 I3	
3424 J8	3478 B17	T446 J3	
3425 K8	3479 B17	T447 J3	
3426 K8	3480 B18	T448 J3	
3427 H11	3482 B18	T449 K3	
3428 H11	3483 B11	T450 K3	

VERSION	ITEM	2417	3433	3434	3476
AZ1550	/01 /10 /11 /17				X
	/00 /05		X		X
	/14			X	X
AZ1565 / AZ1560	ALL VERSION	X	X	X	

ITEM	AZ1550	AZ1565 / AZ1560
3439	100	1K
3440	100	1K
3479	4K7	22K
3480	4K7	22K

Pin for AZ1550 / AIMS Band	+FM	+LW
FM	H	L
MW	L	L
LW	L	H
FM L	H	H

CONTROL BOARD - LAYOUT DIAGRAM



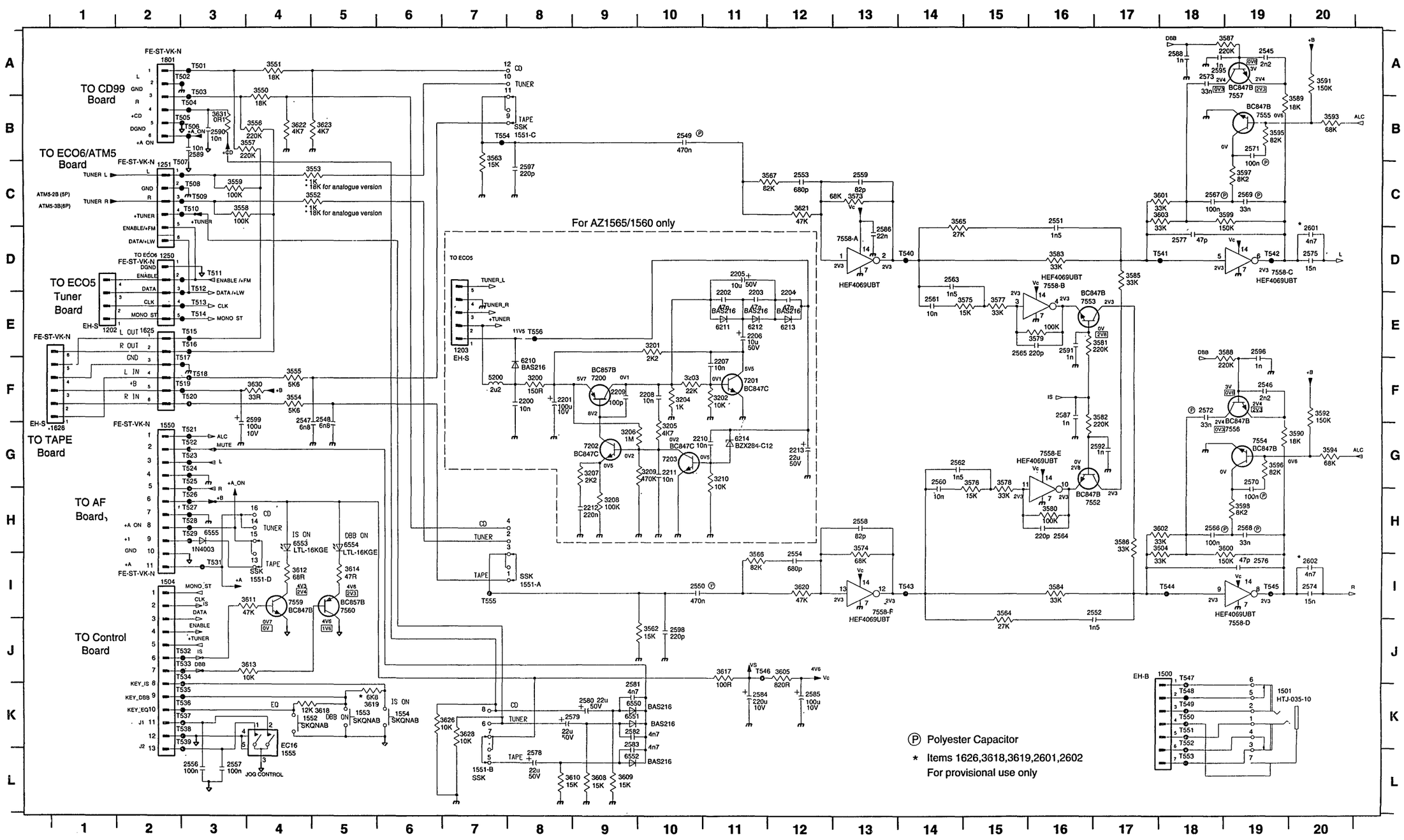
1490 B14
1491 D13
1492 B1
1493 D2
6403 B4
7413 A6
7414 B11
9450 B2
9451 C2
9452 B3
9453 B5
9454 C3
9455 C4
9456 D5
9457 F3
9458 E3
9459 F4
9460 E8
9461 E10
9462 D10
9463 D10
9464 B13
9465 D13
9466 B13
9467 D12
9468 E3
9469 F8
9470 D10

2400 C12	3416 E11	3454 D7	3498 A4
2401 A13	3417 E11	3455 A11	4400 A13
2402 A10	3418 E11	3456 A11	4401 B13
2403 E13	3419 E11	3457 B11	4402 E12
2404 E13	3420 D11	3458 E6	4403 F7
2406 A11	3421 C14	3459 E5	4404 E4
2407 B12	3422 C11	3460 E4	4405 E5
2408 D9	3423 C11	3461 E4	4406 E4
2409 E2	3424 B11	3462 E4	4407 F2
2411 E8	3425 B11	3463 D12	4408 E2
2412 E6	3426 B10	3464 D3	4409 D2
2413 E7	3427 E9	3465 D2	4410 B6
2414 D4	3428 E10	3466 E7	4411 A5
2415 F8	3429 E9	3467 E7	4412 B3
2416 B2	3430 E10	3468 E7	4414 A3
2417 A2	3431 E9	3469 D4	4415 B2
2418 B1	3432 E10	3470 C1	4416 E5
2419 B6	3433 E9	3471 D4	4417 D3
2420 C14	3434 F9	3472 D4	4418 F2
2421 B6	3437 B6	3473 E8	4419 D3
2422 D2	3438 B6	3474 C5	6400 B13
2423 F9	3439 C6	3475 B5	6401 A14
3400 B14	3440 C6	3476 A2	7400 C8
3401 A13	3441 C6	3477 B1	7410 B13
3402 A13	3442 E9	3478 A2	7411 D2
3403 A10	3443 D5	3479 C1	7412 E6
3404 A12	3444 D6	3480 B5	7415 B4
3405 A12	3445 D5	3481 E8	7416 B5
3406 D13	3446 D6	3482 C1	7417 A3
3407 D12	3447 D6	3483 B4	
3408 D11	3448 D8	3484 A3	
3409 E12	3449 E8	3485 B4	
3410 E11	3450 D7	3487 A4	
3411 A3	3451 D6	3488 A4	
3414 E10	3452 D7	3489 A4	
3415 E10	3453 D6	3490 E4	

PCS 99 426

FEATURE BOARD - CIRCUIT DIAGRAM

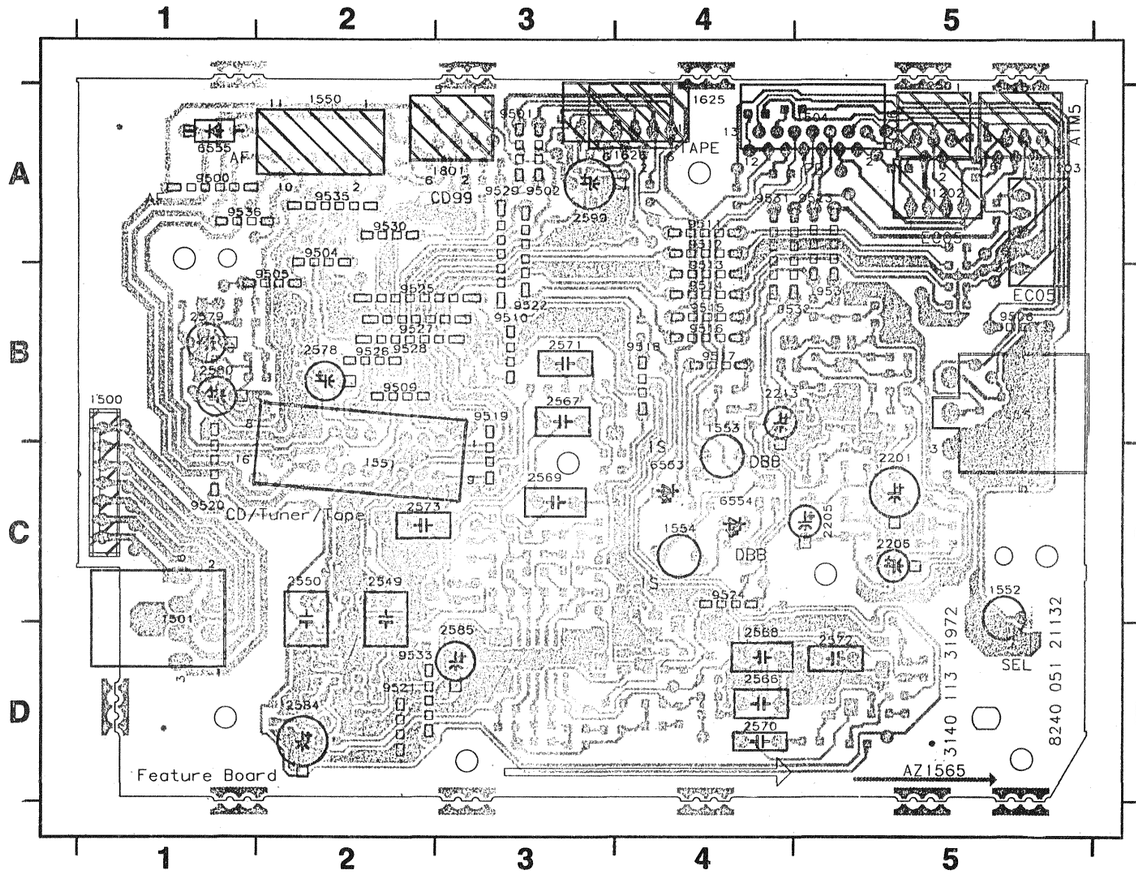
1202 E2	1551-B L7	1801 A2	2208 F10	2548 F5	2558 H13	2567 C18	2576 I19	2585 K12	2596 E19	3203 F10	3551 A4	3562 J10	3576 G15	3585 D17	3594 G20	3603 C18	3614 I5	3628 K7	6550 K9	7203 G10	7558-C D19	T504 B3	T513 E3	T522 G3	T532 J3	T541 D18	T550 K18
1203 E7	1551-C B8	2200 F8	2209 F9	2549 B10	2559 C13	2568 H19	2577 D18	2586 D13	2597 C8	3204 F10	3552 C5	3563 B7	3577 E15	3586 H17	3595 B19	3604 H18	3617 J11	3630 F4	6551 K9	7552 H17	7558-D J19	T505 B3	T514 E3	T523 G3	T533 J3	T542 D19	T551 K18
1250 D2	1551-D I4	2201 F8	2210 G10	2550 I10	2560 G14	2569 C19	2578 L8	2587 F16	2598 J10	3205 G10	3553 C5	3564 I15	3578 G15	3587 A19	3596 G19	3605 J12	3618 K5	3631 B3	6552 L9	7553 E16	7558-E G16	T506 B3	T515 E3	T524 G3	T534 J3	T543 I14	T552 K18
1251 C2	1552 K4	2202 E11	2211 G10	2551 C16	2561 E14	2570 G19	2579 K8	2588 A18	2599 F4	3206 G9	3554 F4	3565 C14	3579 E16	3588 E19	3597 C19	3608 L9	3619 K5	5200 F7	6553 H4	7554 G19	7558-F I13	T507 C2	T516 E3	T525 G3	T535 K3	T544 I18	T553 L18
1500 J18	1553 K5	2203 E11	2212 H9	2552 I17	2562 G14	2571 B19	2580 K9	2589 B3	2601 D20	3207 G9	3555 F4	3566 I11	3580 H16	3589 B20	3598 H19	3609 L9	3620 I12	6210 F8	6554 H5	7555 B19	7559 I4	T508 C3	T517 F3	T526 H3	T536 K3	T545 I19	T554 B7
1501 K19	1554 K6	2204 E12	2213 G12	2553 C12	2563 D14	2572 F18	2581 K9	2590 B3	2602 I20	3203 H9	3556 B4	3567 C12	3581 E17	3590 G20	3599 C19	3610 L9	3621 C12	6211 E11	6555 H3	7556 G19	7560 I5	T509 C3	T518 F3	T527 H3	T537 K3	T546 J11	T555 I7
1504 I2	1555 L4	2205 D11	2545 A19	2554 I12	2564 H16	2573 A18	2582 K9	2591 E16	3200 F8	3209 G10	3557 B4	3568 I11	3582 F17	3591 A20	3600 H19	3611 I4	3622 B4	6212 E11	7200 F9	7557 A19	T501 A3	T510 C3	T519 F3	T528 H3	T538 K3	T547 J18	T556 E8
1550 G2	1625 E2	2206 E11	2547 G4	2556 L3	2565 E15	2574 I20	2583 K9	2592 G17	3201 E10	3210 G11	3558 C3	3569 C3	3575 E15	3584 I16	3593 B20	3602 H18	3613 J4	3626 K7	6214 G11	7202 G9	7558-A D13	T502 A3	T511 D3	T520 F3	T529 H3	T539 K3	T548 K18	
1551-A I8	1626 G1	2207 F11	2547 G4	2557 L3	2566 H18	2575 D20	2584 K11	2595 A18	3202 F11	3550 A4	3559 C3										7558-B D16	T503 A3	T512 D3	T521 G3	T531 I3	T540 D14	T549 K18	

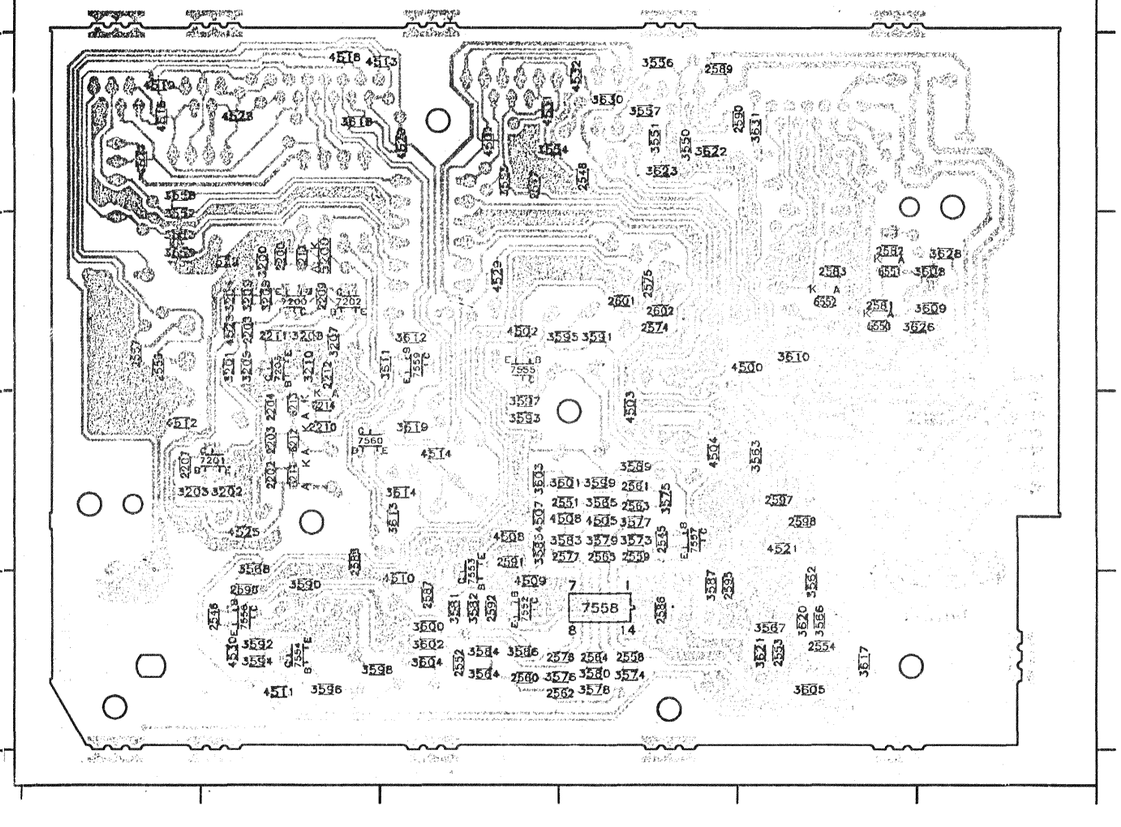


FEATURE BOARD - LAYOUT DIAGRAM

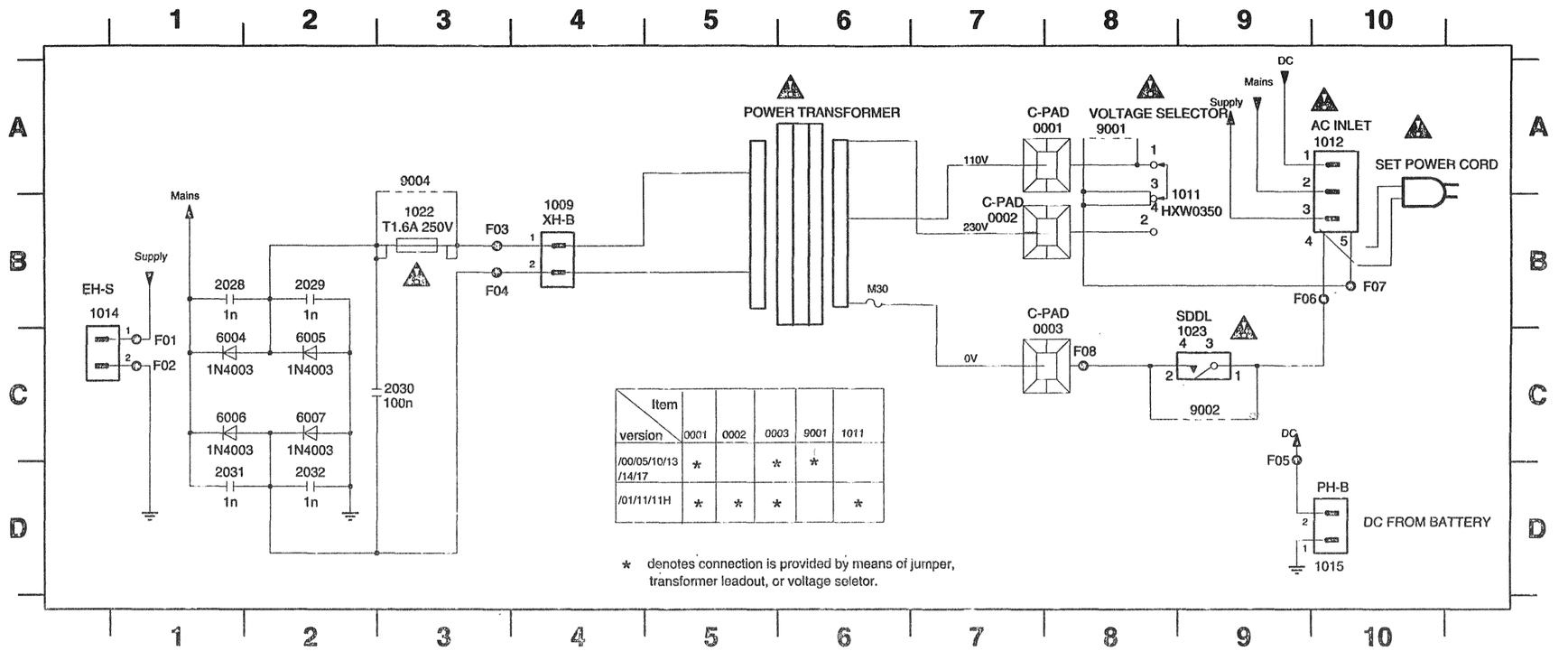
1202 A5	1552 C5	2206 C5	2571 B3	6553 C4	9509 B2	9518 B4	9527 B2	9536 A1
1203 A5	1553 B4	2213 B4	2572 D5	6554 C4	9510 B3	9519 B3	9528 B2	
1250 A5	1554 C4	2549 C2	2573 C2	6555 A1	9511 A4	9520 C1	9529 A3	
1251 A5	1555 B5	2550 C2	2578 B2	9500 A1	9512 A4	9521 D2	9530 A2	
1500 B1	1625 A4	2566 D4	2579 B1	9501 A3	9513 B4	9522 B3	9531 A4	
1501 C1	1626 A4	2567 B3	2580 B1	9502 A3	9514 B4	9523 A5	9532 B4	
1504 A5	1801 A3	2568 D4	2584 D2	9504 A2	9515 B4	9524 C4	9533 D2	
1550 A2	2201 C5	2569 C3	2585 D3	9505 B2	9516 B4	9525 B2	9534 B5	
1551 C2	2205 C5	2570 D4	2599 A3	9506 B5	9517 B4	9526 B2	9535 A2	

2200 B2	2556 B1	2587 D3	3206 B2	3565 C4	3588 C2	3608 B6	4500 B5	4520 A3	3551 B5	
2202 C2	2557 B1	2588 C2	3207 B2	3566 D5	3589 C4	3609 B6	4501 A3	4521 C5	3552 B5	
2203 C2	2558 D4	2589 A4	3208 B2	3567 D5	3590 D2	3610 B5	4502 B3	4522 B2	7200 B2	
2204 C2	2559 C4	2590 A5	3209 B2	3573 C4	3591 B4	3611 B3	4503 C4	4523 B2	7201 C2	
2207 C1	2560 D3	2591 C3	3210 B2	3574 D4	3592 D2	3612 B3	4504 C4	4524 A1	7202 B2	
2208 B2	2561 C4	2592 D3	3550 A4	3575 C4	3593 C3	3613 C3	4505 C4	4525 C2	7203 B2	
2209 B2	2562 D4	2595 D4	3551 A4	3576 D4	3594 D2	3614 C3	4506 C4	4528 A2	7552 D3	
2210 C2	2563 C4	2596 D2	3552 B1	3577 C4	3595 B4	3617 D5	4507 C3	4529 B3	7553 D3	
2211 B2	2564 D4	2597 C5	3553 B1	3578 D4	3596 D2	3618 A2	4508 C3	4530 D2	7554 D2	
2212 B2	2565 C4	2598 C5	3554 A3	3579 C4	3597 C3	3619 C3	4509 D3	4531 A3	7555 B3	
2545 C4	2574 B4	2601 B4	3555 A3	3580 D4	3598 D2	3620 D5	4510 D3	4532 A4	7556 D2	
2546 D2	2575 B4	2602 B4	3556 A4	3581 D3	3599 C4	3621 D5	4511 D2	5200 B2	7557 C4	
2547 A3	2576 D4	3200 B2	3557 A4	3582 D3	3600 D3	3622 A4	4512 C1	6210 B2	7558 D4	
2548 A4	2577 C4	3201 B2	3558 A1	3583 C4	3601 C4	3623 A4	4513 A3	6211 C2	7559 B3	
2551 C4	2581 B5	3202 C2	3559 B1	3584 D3	3602 D3	3626 B6	4514 C3	6212 C2	7560 C2	
2552 D3	2582 B5	3203 C1	3562 D5	3585 C3	3603 C3	3628 B6	4515 A1	6213 C2		
2553 D5	2583 B5	3204 B2	3563 C5	3586 D3	3604 D3	3630 A4	4518 A2	6214 C2		
2554 D5	2586 D4	3205 B2	3564 D3	3587 D4	3605 D5	3631 A5	4519 A1	6550 B5		



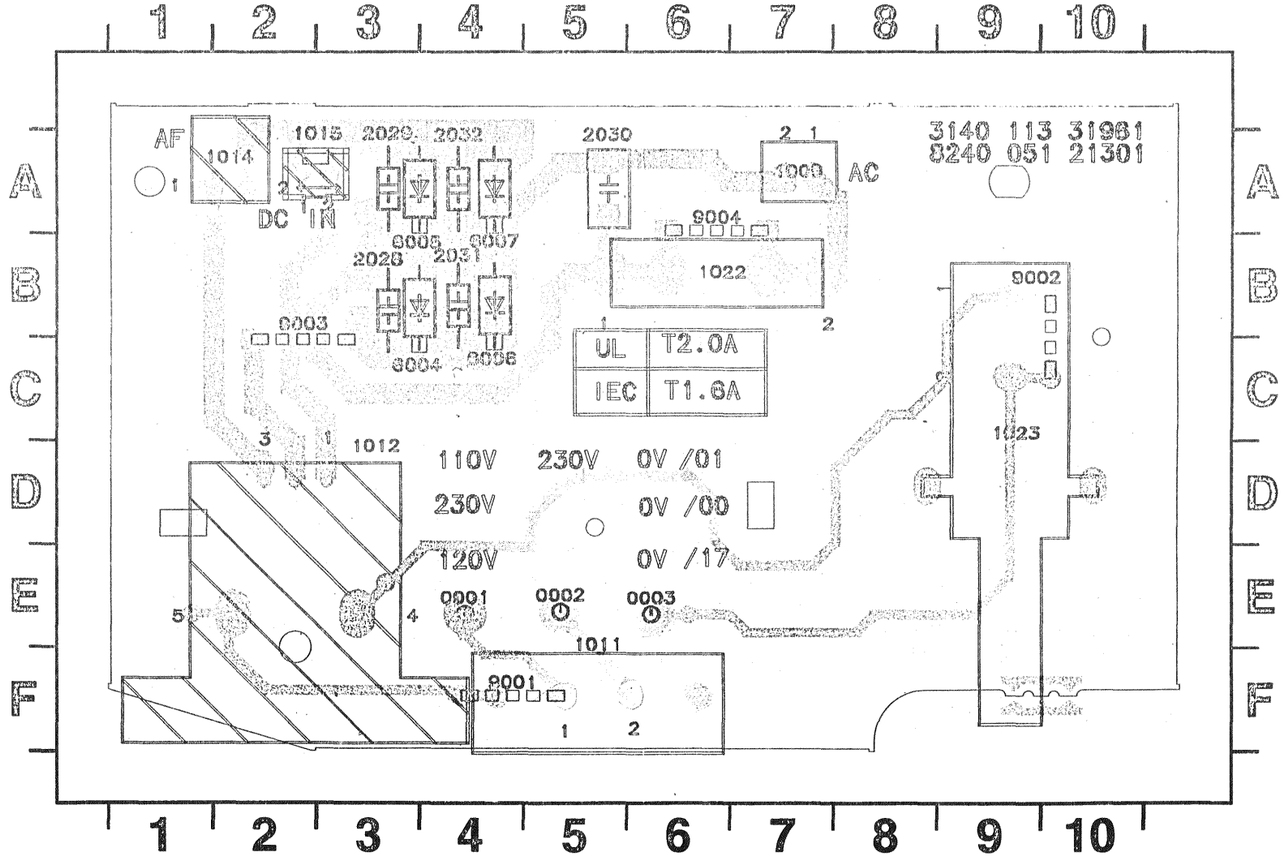


POWER BOARD - CIRCUIT & LAYOUT DIAGRAM



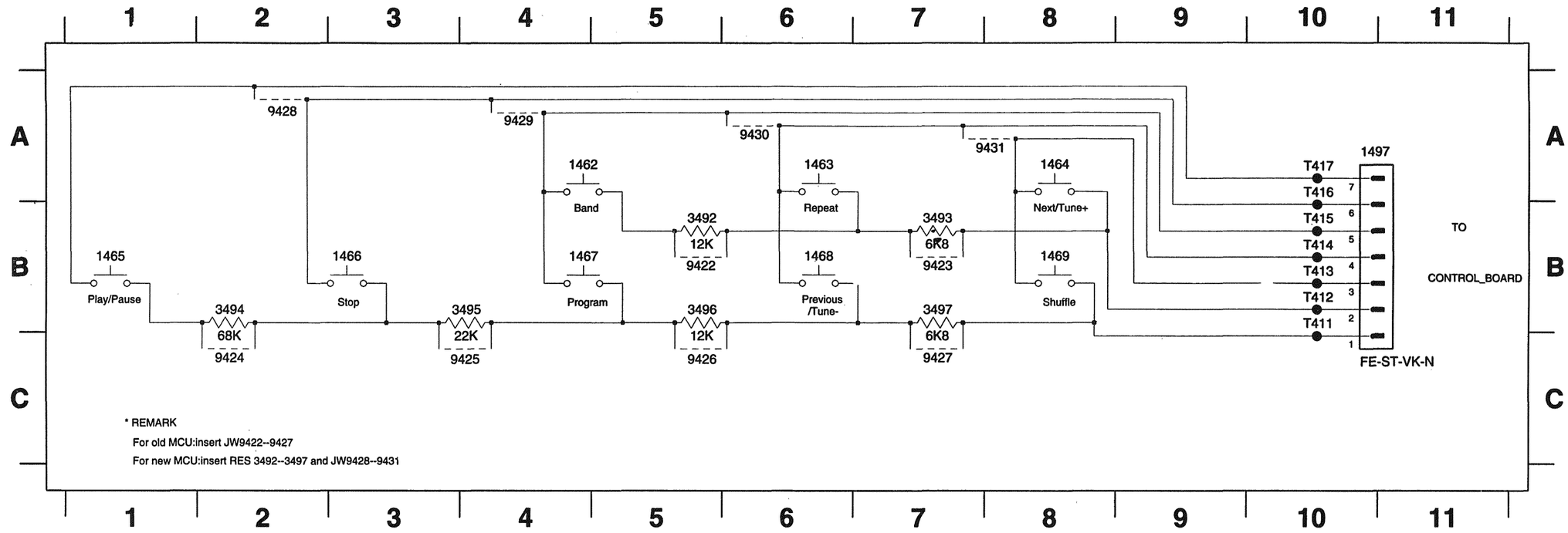
Item / version	0001	0002	0003	9001	1011
/00/05/10/13 /14/17	*		*	*	
/01/11/11H	*	*	*		*

F01 C1
F02 C1
F03 B3
F04 B3
F05 D9
F06 B9
F07 B10
F08 C8
0001 A7
0002 B7
0003 C7
1009 B4
1011 A9
1012 A10
1014 B1
1015 D10
1022 B3
1023 B9
2028 B1
2029 B2
2030 C3
2031 D1
2032 D2
6004 C1
6005 C2
6006 C1
6007 C2
9001 A8
9002 C9
9004 A3



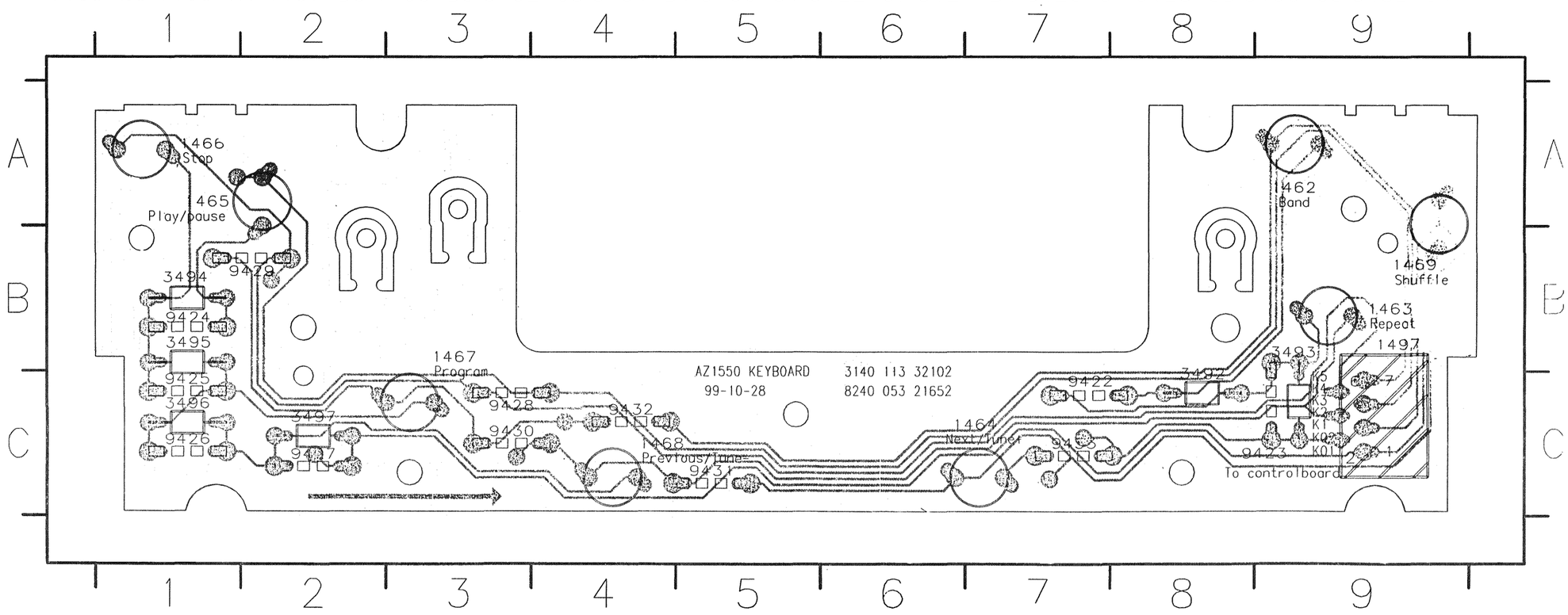
0001 E4
0002 E5
0003 E6
1009 A7
1011 E5
1012 D3
1014 A2
1015 A3
1022 B6
1023 C9
2028 B3
2029 A3
2030 A5
2031 B4
2032 A4
6004 C3
6005 B3
6006 C4
6007 B4
9001 F4
9002 B9
9003 B2
9004 A6

KEYBOARD - CIRCUIT & LAYOUT DIAGRAM



1462 A4
1463 A6
1464 A8
1465 B1
1466 B3
1467 B4
1468 B6
1469 B8
1497 A10
3492 B5
3493 B7
3494 B2
3495 B4
3496 B5
3497 B7
9422 B5
9423 B7
9424 C2
9425 C4
9426 C5
9427 C7
9428 A2
9429 A4
9430 A6
9431 A8
T411 B10
T412 B10
T413 B10
T414 B10
T415 B10
T416 A10
T417 A10

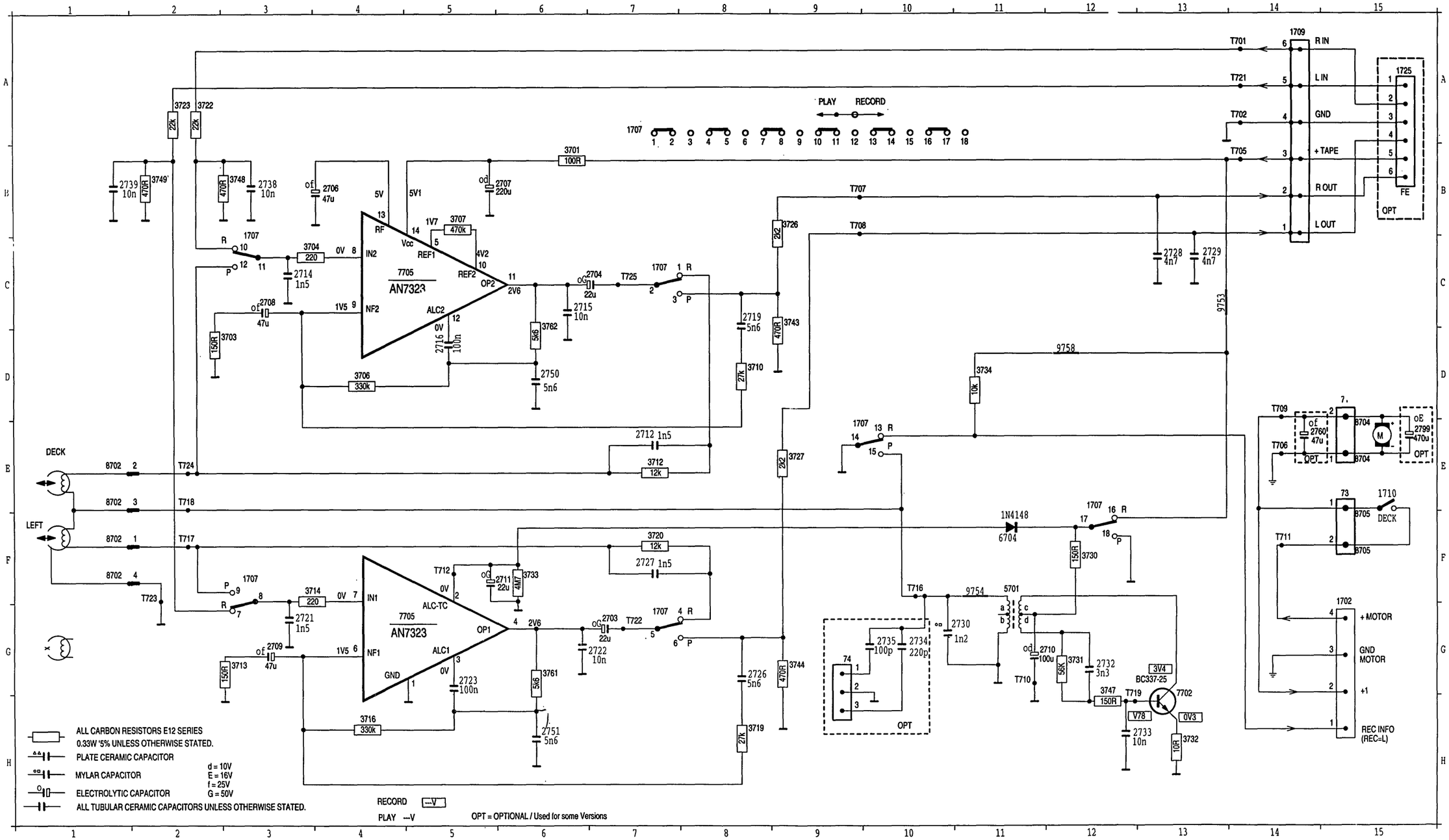
1462 A9 1464 C7 1466 A1 1468 C4 1497 B9 3493 B9 3495 B1 3497 C2 9423 C9 9425 C1 9427 C2 9429 B2 9431 C5 9433 C7
1463 B9 1465 A1 1467 B3 1469 B9 3492 C8 3494 B1 3496 C1 9422 C7 9424 B1 9426 C1 9428 C3 9430 C3 9432 C4



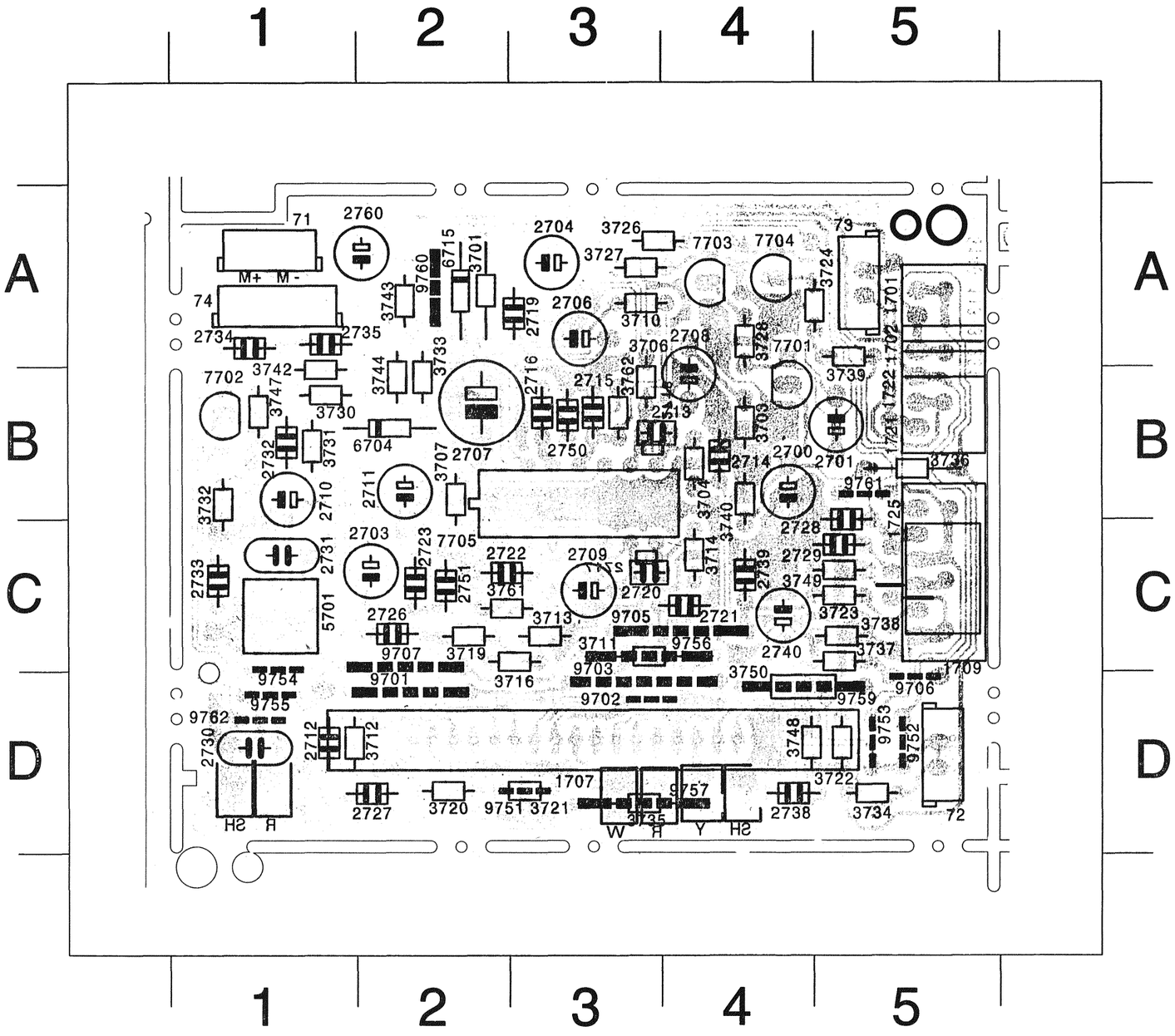
PCS 104 226

RECORDER BOARD - CIRCUIT DIAGRAM

71	D15	1707	C 3	1709	A14	2706	B 4	2711	F 6	2719	C 8	2727	F 7	2733	H13	2750	D 6	3703	D 3	3712	E 7	3720	F 7	3730	F12	3743	C 9	3761	G 6	7705	G 4	8702	E 1	9753	C13	T705	B14	T710	G11	T718	E 2	T724	E 2
73	E15	1707	G 7	1710	E15	2707	B 6	2712	E 7	2721	G 3	2728	C13	2734	G10	2751	H 6	3704	C 3	3713	G 3	3722	A 2	3731	G12	3744	G 9	3762	D 6	7705	C 4	8704	E15	9754	F11	T706	E14	T711	F14	T719	H13	T725	C 2
74	G 9	1707	C 7	1725	A15	2708	C 3	2714	C 3	2722	G 7	2729	C13	2735	G10	2760	E14	3706	D 4	3714	F 3	3723	A 2	3732	H13	3747	G12	5701	F11	8702	F 1	8704	E15	9758	D12	T707	B10	T712	F 5	T721	A14		
170.	G15	1707	E 9	2703	G 7	2709	G 3	2715	C 6	2723	G 5	2730	G11	2738	B 3	2799	E15	3707	B 5	3716	H 4	3726	B 9	3733	F 6	3748	B 3	6704	F11	8702	F 1	8705	F15	T701	A14	T708	B10	T716	F10	T722	G 7		
170.	F 3	1707	E12	2704	C 7	2710	G12	2716	D 5	2726	G 8	2732	G12	2739	B 1	3701	B 6	3710	D 8	3719	H 8	3727	E 9	3734	D11	3749	B 2	7702	H13	8702	E 1	8705	F15	T702	A14	T709	D14	T717	F 2	T723	F 2		



RECORER BOARD - LAYOUT DIAGRAM



71	A 1	2729	C 5	3733	B 2	9756	C 3
72	D 5	2730	D 1	3734	D 5	9757	D 3
73	A 5	2731	C 1	3735	D 3	9759	D 4
74	A 1	2732	B 1	3736	B 5	9760	A 2
1701	A 5	2733	C 1	3737	C 5	9761	B 5
1702	B 5	2734	A 1	3738	C 5	9762	D 1
1707	D 3	2735	A 1	3739	A 5	T701	C 5
1709	C 5	2738	D 4	3740	B 4	T702	C 5
1721	B 5	2739	C 4	3742	B 1	T705	B 5
1722	B 5	2740	C 4	3743	A 2	T706	B 5
1725	C 5	2750	B 3	3744	B 2	T709	A 5
2700	B 4	2751	C 2	3747	B 1	T710	C 1
2701	B 5	2760	A 2	3748	D 4	T711	B 5
2703	C 2	3701	A 2	3749	C 5	T712	C 2
2704	A 3	3703	B 4	3750	D 4	T713	A 5
2706	A 3	3704	B 4	3761	C 2	T714	D 5
2707	B 2	3706	B 3	3762	B 3	T715	D 5
2708	B 4	3707	B 2	5701	C 1	T716	D 1
2709	C 3	3710	A 3	6704	B 2	T719	B 1
2710	B 1	3711	C 3	6715	A 2	T720	A 5
2711	B 2	3712	D 1	7701	B 4	T721	C 5
2712	D 1	3713	C 3	7702	B 1	T722	C 2
2713	B 3	3714	C 4	7703	A 4	T725	D 2
2714	B 4	3716	C 3	7704	A 4	T7707	A 4
2715	B 3	3719	C 2	7705	B 3	T7708	A 4
2716	B 3	3720	D 2	9701	D 2		
2717	C 3	3721	D 3	9702	D 3		
2718	B 3	3722	D 5	9703	D 3		
2719	A 3	3723	C 5	9705	C 4		
2720	C 3	3724	A 5	9706	D 5		
2721	C 4	3726	A 3	9707	C 2		
2722	C 2	3727	A 3	9751	D 3		
2723	C 2	3728	A 4	9752	D 5		
2726	C 2	3730	B 1	9753	D 5		
2727	D 2	3731	B 1	9754	C 1		
2728	C 5	3732	B 1	9755	D 1		

CASSETTE ADJUSTMENT

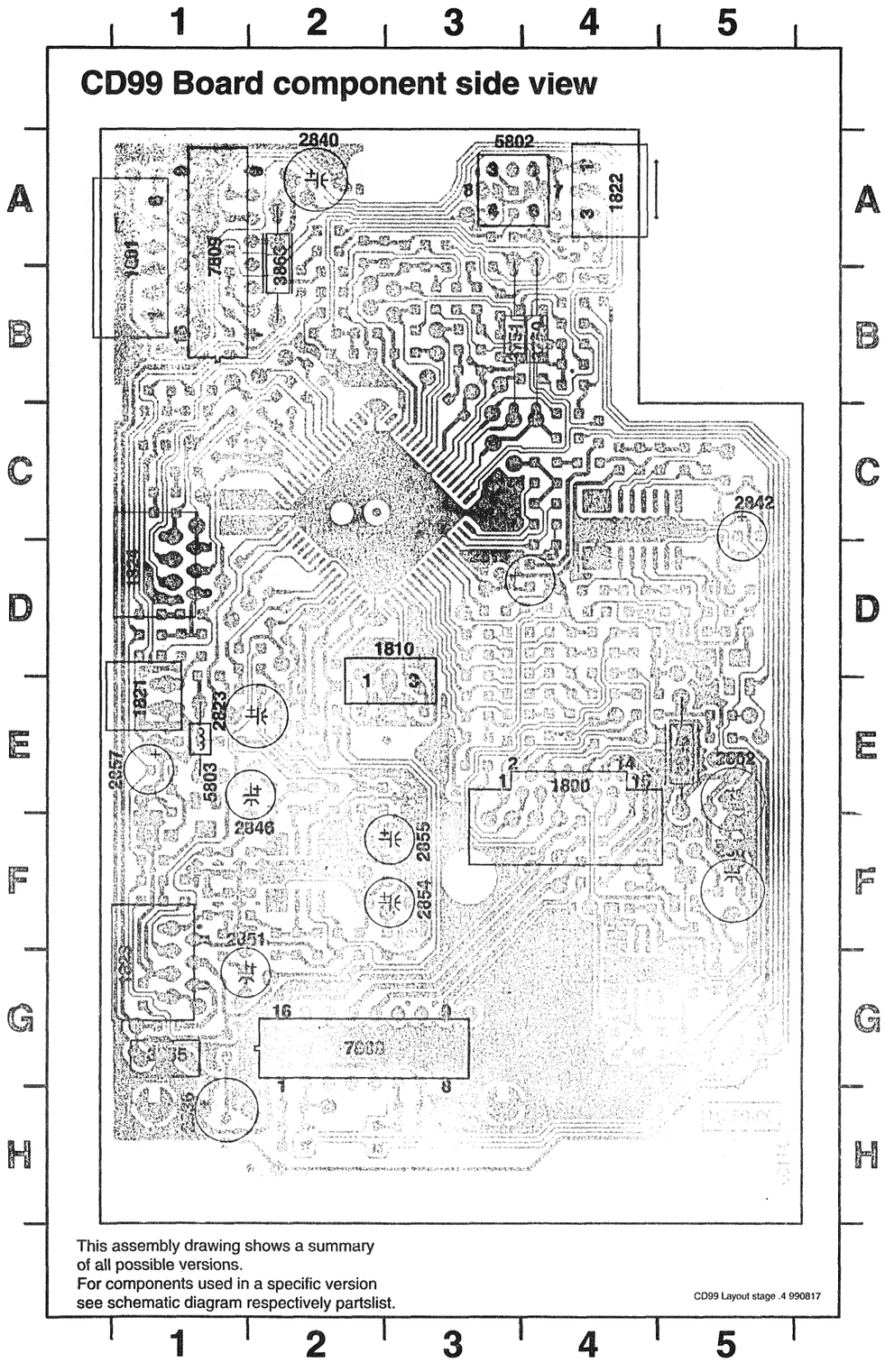
Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	10 kHz SBC420*	Tape	Play	H/P Jack	mV meter	Left hand Screw R/P head	max.
Motor Speed	3150 kHz SBC420*	Tape	Play	H/P Jack	Wow and flutter meter	Preset in motor	**a

* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%.
Morever, the wow and flutter value can be read.

CD99 DA11 - LAYOUT DIAGRAM

CD99 Board component side view

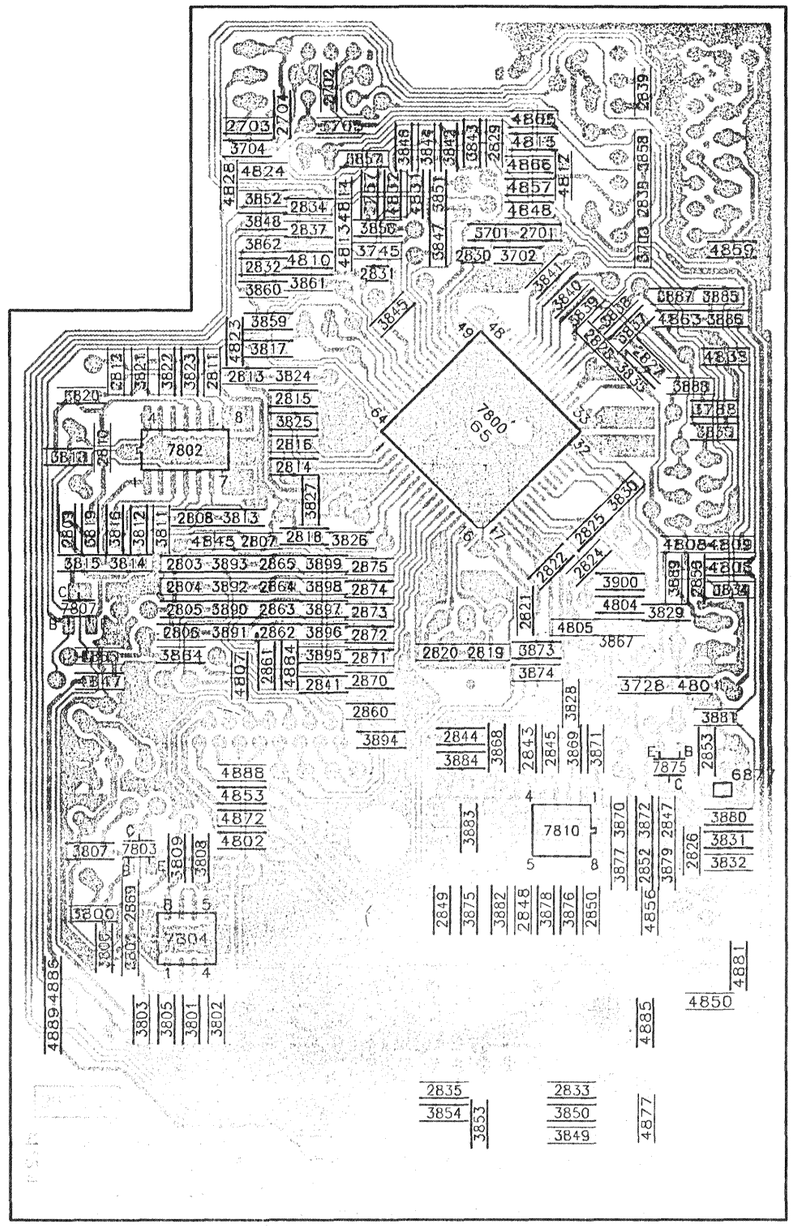


This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 Layout stage .4 990817

1800	F2	3703	B5	3876	F4
1801	A5	3704	A2	3877	F4
1810	D3	3705	A3	3878	F4
1821	E5	3728	E5	3879	F5
1822	A2	3745	B3	3880	F5
1823	G5	3750	B2	3881	E5
1824	D5	3751	B2	3882	F4
2701	B4	3757	B3	3883	F3
2702	A2	3788	C5	3884	E3
2703	A2	3800	F1	3885	B5
2704	A2	3801	G2	3886	C5
2801	F1	3802	G2	3887	B5
2802	E1	3803	G1	3888	C5
2803	D2	3804	G1	3889	D5
2804	D2	3805	G1	3890	D2
2805	D2	3806	G1	3891	E2
2806	E1	3807	F1	3892	D2
2807	D2	3808	F2	3893	D2
2808	D2	3809	F1	3894	E3
2809	D1	3810	E1	3895	E2
2810	C1	3811	D1	3896	E2
2811	C2	3812	D1	3897	D2
2812	C1	3813	D2	3898	D2
2813	C2	3814	D1	3899	D2
2814	D2	3815	D1	3900	D4
2815	C2	3816	D1	4801	E5
2816	C2	3817	C2	4802	F2
2817	D2	3818	C1	4804	D4
2818	D2	3819	D1	4805	E4
2819	E4	3820	C1	4806	D5
2820	E3	3821	C1	4807	E2
2821	D4	3822	C1	4808	D5
2822	D4	3823	C2	4809	D5
2823	E4	3824	C2	4810	B2
2824	D4	3825	C2	4812	B4
2825	D4	3826	D3	4813	B3
2826	F5	3827	D2	4814	B3
2827	C5	3828	E4	4815	A4
2828	C4	3829	D5	4823	C2
2829	A4	3830	D4	4824	B2
2830	B3	3831	F5	4828	B2
2831	B3	3832	F5	4831	B3
2832	B2	3834	D5	4832	B3
2833	H4	3835	C4	4838	C5
2834	B2	3836	C5	4845	D2
2835	H3	3837	C4	4847	E1
2836	G5	3838	C4	4848	B4
2837	B2	3839	C4	4850	G5
2838	B5	3840	B4	4853	F2
2839	A5	3841	B4	4856	F5
2840	A4	3842	A3	4857	B4
2841	E2	3843	A3	4859	B5
2842	C1	3844	A3	4863	C5
2843	E4	3845	C3	4865	A4
2844	E3	3846	A3	4866	B4
2845	E4	3847	B3	4872	F2
2846	E4	3848	B2	4877	H5
2847	F5	3849	H4	4881	G5
2848	F4	3850	H4	4884	E2
2849	F3	3851	B3	4885	G5
2850	F4	3852	B2	4886	G1
2851	G4	3853	H3	4888	F2
2852	F5	3854	H3	4889	G1
2853	E5	3855	G5	5802	A2
2854	F3	3856	B3	5803	E5
2855	E3	3857	B3	6877	F5
2856	D5	3858	A5	7800	C4
2857	E5	3859	C2	7802	C2
2860	E3	3860	B2	7803	F1
2861	E2	3861	B2	7804	G2
2862	E2	3862	B2	7807	D1
2863	D2	3863	A4	7808	G4
2864	D2	3864	E1	7809	A5
2865	D2	3865	E1	7810	F4
2869	F1	3867	E4	7875	F5
2870	E3	3868	E4	8401	H3
2871	E3	3869	E4	8402	H5
2872	E3	3870	F4		
2873	D3	3871	E4		
2874	D3	3872	F5		
2875	D3	3873	E4		
3701	B4	3874	E4		
3702	B4	3875	F3		

CD99 Board copper side view

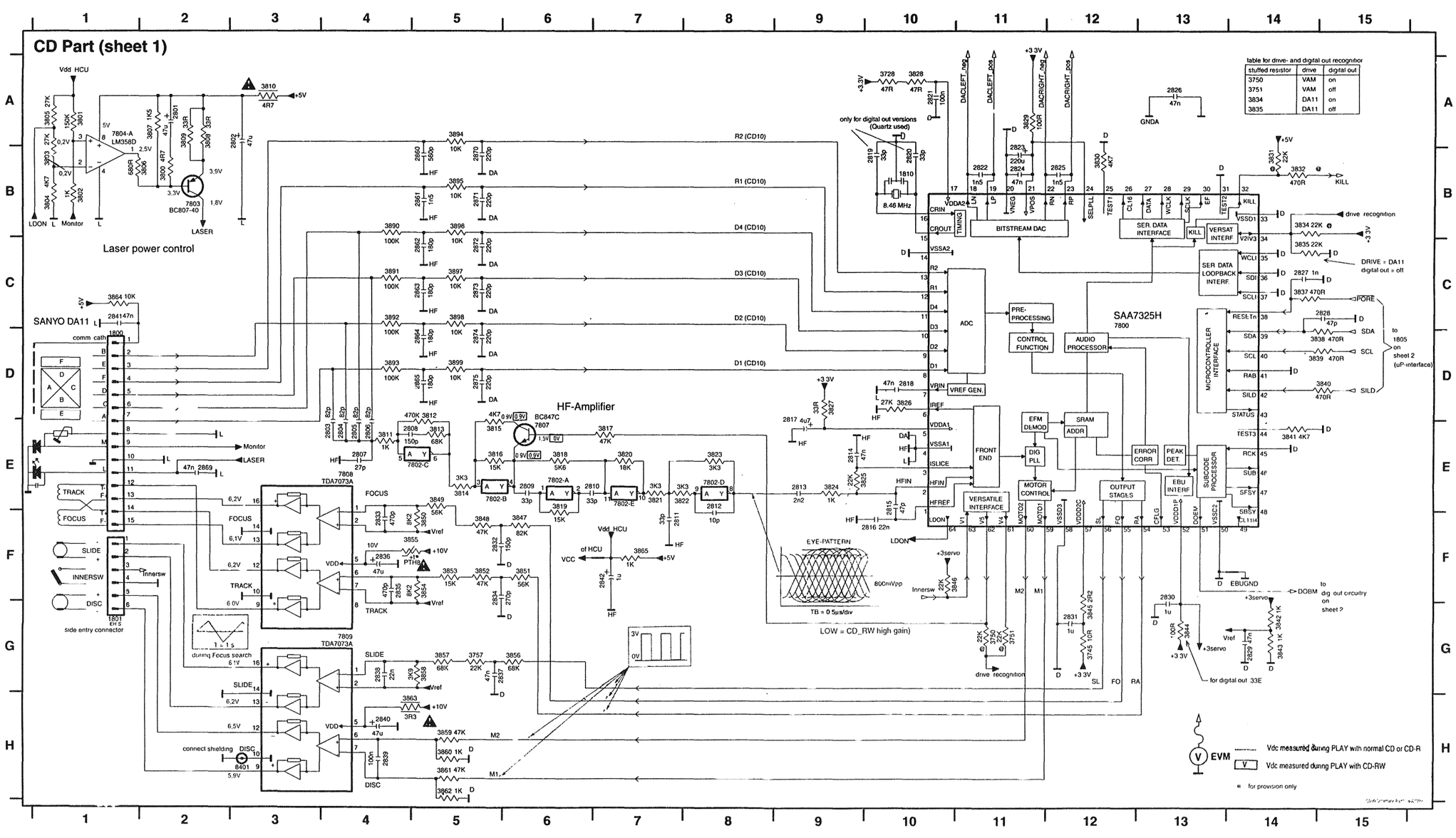


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CD99 Layout stage .4 990817

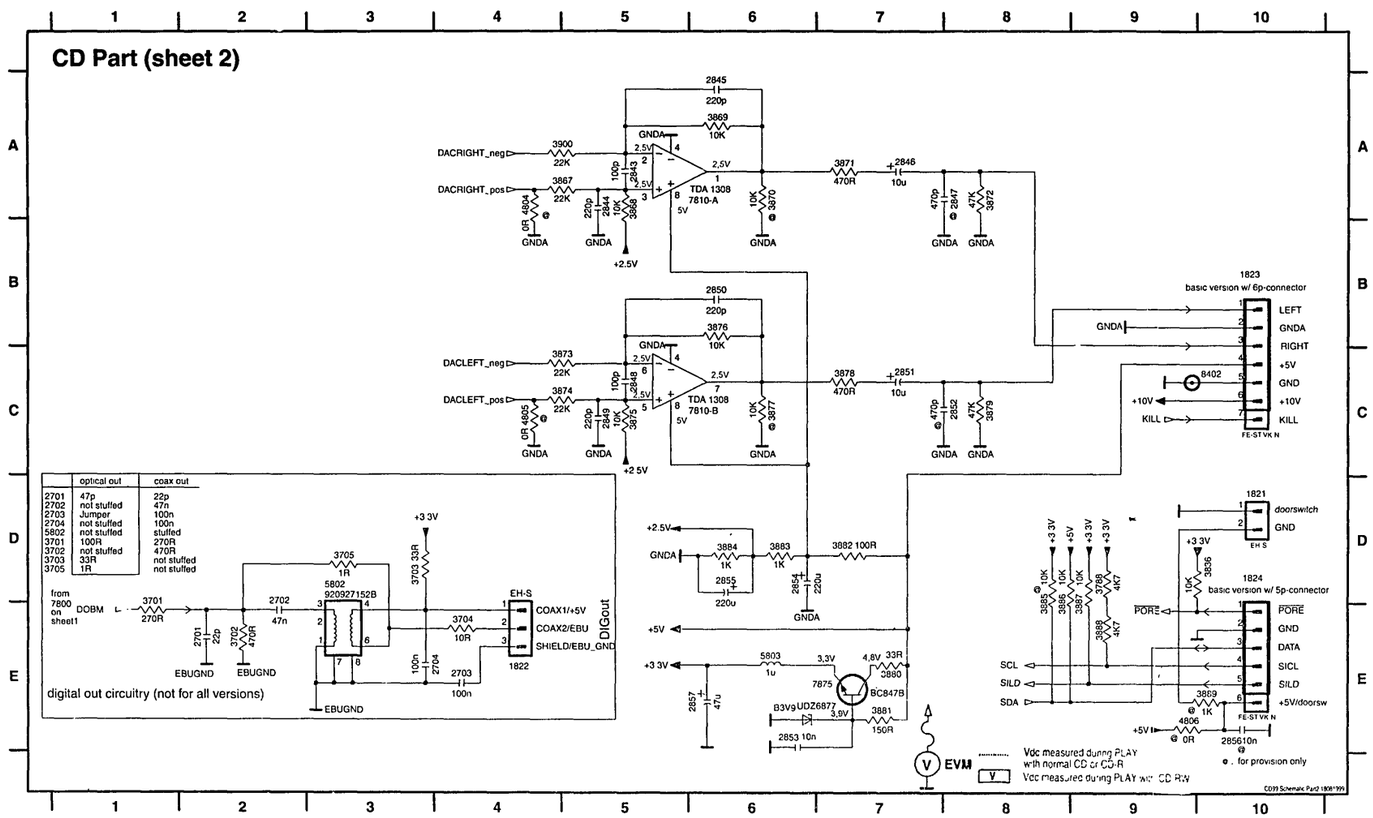
CD99 DA11 - CIRCUIT DIAGRAM

1800 D1	2806 E4	2813 E9	2820 B10	2827 C14	2834 F5	2841 C1	2865 D5	2875 D5	3801 A1	3808 A2	3815 E5	3822 E7	3829 A11	3838 D14	3843 G12	3852 F5	3859 H5	3890 B4	3897 C5	7802-D E8	7808 E4
1801 G1	2807 E4	2814 E9	2821 B11	2828 C14	2835 F4	2842 F7	2869 E2	3728 A10	3802 B1	3809 A2	3816 E5	3823 E8	3830 B12	3839 D14	3844 G13	3853 F5	3860 H5	3891 C4	3898 C5	7802-E E7	7809 G4
2801 A2	2808 E4	2815 E10	2822 B11	2829 G14	2836 F4	2860 B5	2870 B5	3745 G12	3803 B1	3810 A3	3817 E7	3824 E9	3831 B14	3840 D15	3847 F6	3854 F5	3861 H5	3892 C4	3899 D5	7802-F F8	8401 H3
2802 A3	2809 E6	2816 F10	2823 B11	2830 F13	2837 G5	2861 B5	2871 B5	3750 G11	3804 B1	3811 E4	3818 E6	3825 E9	3832 B14	3841 E14	3848 F5	3855 F4	3862 H5	3893 D4	7800 D12	7803 B2	
2803 E4	2810 E6	2817 D9	2824 B11	2831 G12	2838 G4	2862 C5	2872 C5	3751 G11	3805 A1	3812 D5	3819 E6	3826 D10	3834 B14	3842 G14	3849 E5	3856 G6	3863 H4	3894 A5	7802-A E6	7804-A A1	
2804 E4	2811 F7	2818 D9	2825 B12	2832 F5	2839 H4	2863 C5	2873 C5	3757 G5	3806 B2	3813 E5	3820 E7	3827 D9	3835 C14	3843 G14	3850 F5	3857 G5	3864 C1	3895 B5	7802-B E5	7804-B C3	
2805 E4	2812 E8	2819 B10	2826 A13	2833 F4	2840 H4	2864 D5	2874 D5	3800 B2	3807 A2	3814 E5	3821 E7	3828 A10	3837 C14	3844 G13	3851 F6	3858 G5	3865 F7	3896 B5	7802-C E5	7807 E6	

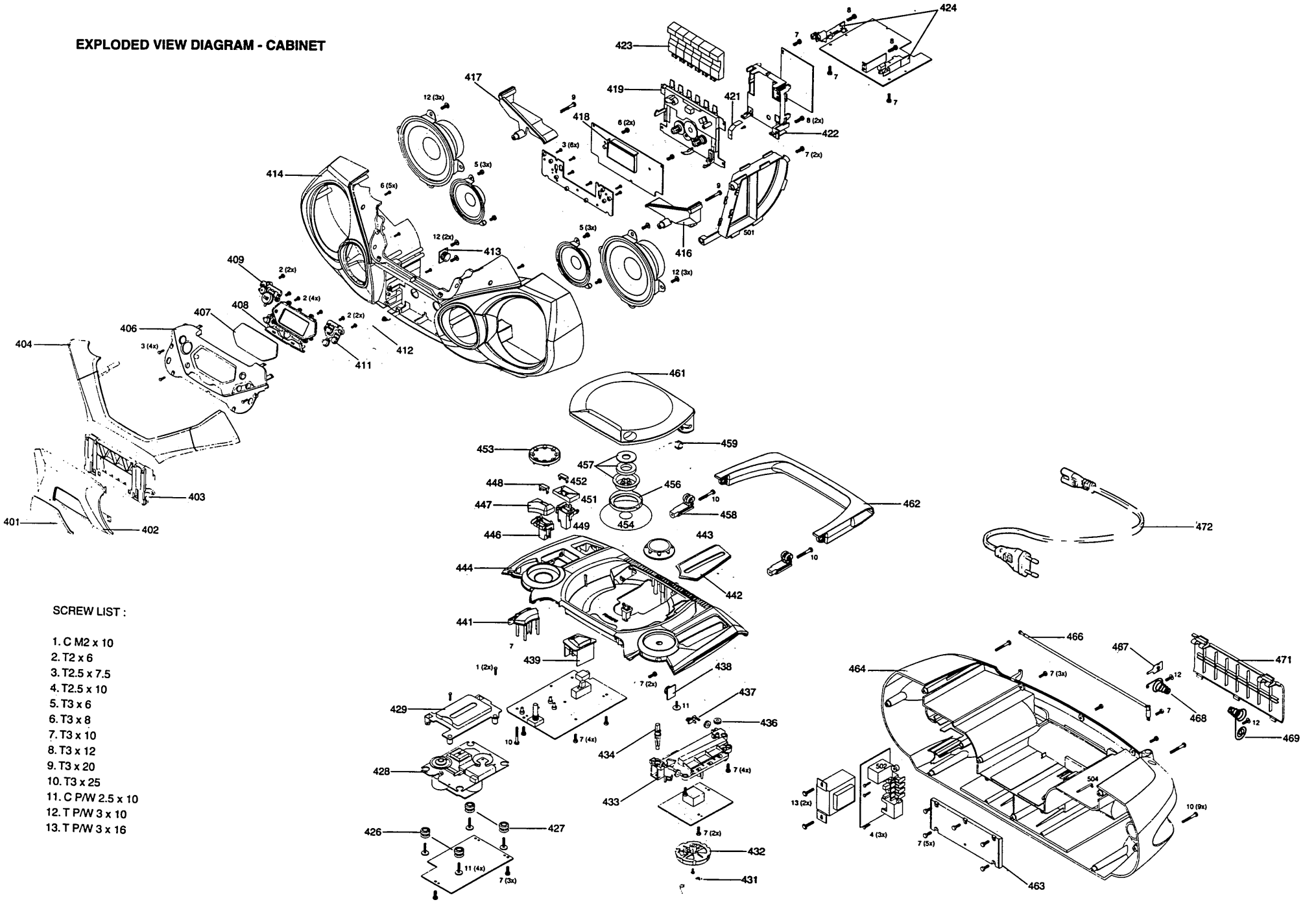


stuffed resistor	drive	digital out
3750	VAM	on
3751	VAM	off
3834	DA11	on
3835	DA11	off

1821 D10	2702 E2	2845 A6	2850 B6	2855 D6	3703 D3	3867 A5	3872 A8	3877 C5	3882 D7	3887 E9	4805 C4	7810-A A5
1822 E4	2703 E4	2846 A7	2851 C7	2856 E10	3704 E4	3868 A5	3873 C5	3878 C7	3883 D6	3888 E9	4806 E9	7810-B C5
1823 B10	2704 E3	2847 A8	2852 C8	2857 E6	3705 D3	3869 A6	3874 C5	3879 C8	3884 D6	3889 E10	5802 D3	7875 E7
1824 D10	2843 A5	2848 C5	2853 E6	3701 E1	3788 E9	3870 A6	3875 C5	3880 E7	3885 E8	3900 A5	5803 E6	8402 C9
2701 E2	2844 A5	2849 C5	2854 D6	3702 E2	3836 D10	3871 A7	3876 B6	3881 E7	3886 E8	4804 A4	6877 E7	



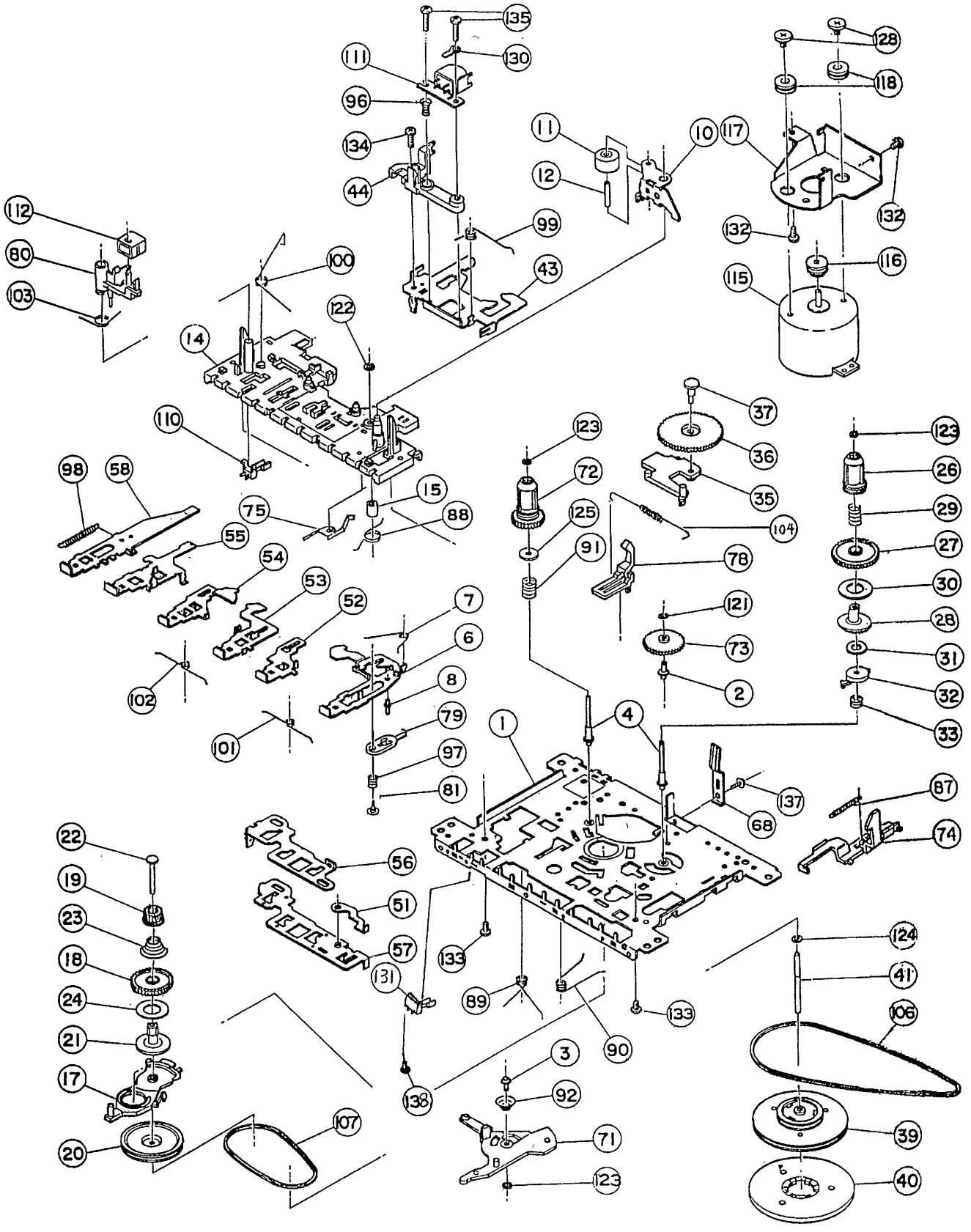
EXPLODED VIEW DIAGRAM - CABINET



SCREW LIST :

1. C M2 x 10
2. T2 x 6
3. T2.5 x 7.5
4. T2.5 x 10
5. T3 x 6
6. T3 x 8
7. T3 x 10
8. T3 x 12
9. T3 x 20
10. T3 x 25
11. C P/W 2.5 x 10
12. T P/W 3 x 10
13. T P/W 3 x 16

EXPLODED VIEW DIAGRAM - TAPE DECK



Lista de Peças

ITEM	CÓDIGO	DESCRICAO
401	3140 114 31160	LENTE-CASSETTE AZ1550
402	3140 117 59010	PLACA ORN. TRANSP. CASS
403	3140 114 28570	PORTA-TECHINICAL AZ1565
404	3140 114 30030	PLACA ORNAMENTAL AZ1550
406	3140 114 30050	PLACA ORN. CD FRONT
407	3140 114 28591	LENTES CD
408	3140 114 30790	TECLAS SEARCH - VISOR
409	3140 114 30060	TECLAS 1-CD AZ1550
411	3140 114 30070	TECLAS 2-CD AZ1550
412	3140 111 00620	MOLA P/ TAMP CASSETE
413	3139 118 73620	UNIDADE HIDRAULICA
414	3140 117 59590	CJ GABINETE FRONTAL AZ1550
416	3140 114 28750	TAMPA-BASS DIREITA
417	3140 114 28740	TAMPA-BASS ESQUERDA
418	3140 114 28760	SUPORTE PLAST LCD
419	3140 118 71100	TAPE DECK CDS-83-VBF-77
421	3140 111 20800	MOLA DE GRAVAÇÃO
422	3140 114 20430	SUPORTE PARA TAPE DECK
423	3140 114 28580	CONJ. TECLA-CASSETE
424	3140 114 28780	SUPORTE DO PCB AF
426	3140 114 13900	AMORTECEDOR-BORRACHA (40GRS)
427	3140 114 13890	AMORTECEDOR-BORRACHA (30GRS)
428	4822 691 10654	CDM - DA11
431	3190 101 01000	MOLA POLIA SINTONIA
432	3190 104 11580	POLIA DE SINTONIA
433	3140 114 30120	SUPORTE PCB TUNER
434	3140 114 16840	EIXO DA SINTONIA (T2)
436	3190 104 05560	POLIA POM
437	3140 114 30110	PONTEIRO AZ1550
438	3139 118 73620	UNIDADE HIDRAULICA
439	3140 114 28670	BOTÃO MODE
441	3140 114 28700	BOTÃO SOUND SELECT
442	3140 114 30780	LENTE-TUNER
443	3140 114 30090	BOTÃO-TUNING AZ1550
444	3140 114 30800	GABINETE SUPERIOR AZ1550
446	3140 114 31200	SUPORTE LED-DBB
447	3140 114 28650	BOTÃO DBB
448	3140 114 28660	LENTE-DBB
449	3140 114 29300	SUPORTE LED-IS
451	3140 114 28680	BOTÃO IS
452	3140 114 28690	LENTE-IS
453	3140 114 28640	BOTÃO VOLUME
454	3139 118 10000	DISCO
456	3140 114 24400	ANEL (CD LID)
457	3140 114 03280	ANEL DE PRESSÃO CD
458	3103 307 95010	SUPORTE DA ALÇA
459	3140 111 00480	MOLA-CD
461	3140 114 30040	PORTA-CD AZ1550
462	3140 114 28730	ALÇA
463	3140 114 28790	TAMPA-BASS
464	3140 114 28510	GABINETE TRASEIRO AZ1565
466	3140 118 71570	ANTENA TELESCÓPCA
467	3140 111 21320	CONTATO BAT (+)
468	3139 111 00580	CONTATO BAT (-)
469	3139 111 00250	CONTATO BAT (+/-)
471	3140 114 28710	PORTA-BATERIA
472	3140 118 70730	CABO DE REDE
	2422 264 00376	FALANTE 4R 6W
	2422 264 00375	TWEETER - 8R 1W
	3140 110 00130	LOGOTIPO - PHILIPS
	3140 113 21830	COBER. SELETOR VOLTAGEM
	3140 114 28720	SUPORTE ANTENA AM

ITEM	CÓDIGO	DESCRICAO
	4806 502 77022	PARAF 2X6 TORX SCR ST ZN
	4806 502 77021	PARAF 3X12 TORX SCR ST ZN
	4806 502 77021	PARAF 3X12 TORX SCR ST ZN
	4806 502 77019	PARAF 3X20 TORX SCR ST ZN
1000	2422 025 14521	CONECT BM V11P F 1.25 FFC 0.3
1001	2422 034 20021	CON BM V 1P M RT-01T-1.0B B
1003	2412 020 00724	CONECTOR CI 2P M 2.50 EH B
1004	2422 025 11244	CONECTOR CI 7P M 2.50 EH B
1005	2422 025 14516	CONECT CI V 7P F 1.25 FFC
1006	2422 025 12479	CONECTOR CI 4P M 2.50 EH B
1007	2422 025 09405	CONECTOR 2P
1009	4806 265 47017	CONECTOR 2P
1010	4806 253 37016	FUSIVEL T A 5X20 250V 1.6A
1011	2422 129 15462	SELVOLT 1P 1A V PIN HXW0350
1012	3139 118 70680	SOQUETE REDE (IEC) SW
1013	2412 020 00724	CONECTOR CI 2P M 2.50 EH B
1014	8240 008 70120	CHAVE LATCH 1P 2POS V DLS
1014	2422 025 12488	CONECTOR BM H 2P M 2.50 EH B
1015	3140 118 32350	TRANSF FORCA EI48/01
1015	2422 025 09405	CONECTOR 2P
1110	2422 025 14514	CONEC BM V 5P F 1.25 FFC 0.3 B
1251	2422 025 14534	CON BM H 5P F 1.25 FFC 0.3 B
1400	2422 540 98455	RES CER 4MHZ194 CSTS*MG03
1462	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1463	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1464	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1465	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1466	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1467	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1468	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1469	2422 128 02917	CHAVE TACT 1P 20MA 15V EVQ11 A
1490	2422 025 14535	CONECTOR CI 6P F 1.25 FFC 0.3
1491	2422 025 14536	CONECTOR IC H 7P 1.25 FFC 0.3
1492	2422 025 14543	CONECTOR BM H 13P F1.25FFC0.3
1493	2422 025 14536	CONECTOR IC H 7P 1.25 FFC 0.3
1497	2422 025 14536	CONECTOR IC H 7P 1.25 FFC 0.3
1500	2422 025 11244	CONECTOR CI 7P M 2.50 EH B
1501	2422 026 05076	CONECTOR BM PHON H 1P F 3.5 ST
1504	2422 025 14543	CONECTOR BM H 13P F1.25FFC0.3
1550	2422 025 14541	CONECTOR BM H 11P F1.25 FFC0.3
1551	2422 127 00445	CHAVE SLID 4P 3POS SSK-43E01
1552	2422 128 02922	CHAVE TACT 1P 20MA 15V EVQ11 A
1553	2422 128 02922	CHAVE TACT 1P 20MA 15V EVQ11 A
1554	2422 128 02922	CHAVE TACT 1P 20MA 15V EVQ11 A
1555	2422 129 16233	POT ROT 24P EC16B2420*
1625	2422 025 14535	CONECTOR CI 6P F 1.25 FFC 0.3
1800	2422 025 12132	CONECTOR BM HOR 15P F 1.00
1801	2422 025 14535	CONECTOR CI 6P F 1.25 FFC 0.3
1801	2422 025 10738	CONECTOR CI 6P M 2.50 EH B
1810	4806 242 77095	RESSONADOR CER 8MHZ467
1821	2422 025 12488	CONECTOR BM H 2P M 2.50 EH B
1823	2422 025 14535	CONECTOR CI 6P F 1.25 FFC 0.3
1824	2422 025 14535	CONECTOR CI 6P F 1.25 FFC 0.3
1999	3106 309 01201	CJ I.A. CONTROL AZ1550/19
2025	4806 124 27574	CAP EL UG AL CI 16V 4700U PM20
2028	4806 122 17012	CAP 1N 50V PM10 CER TUB
2029	4806 122 17012	CAP 1N 50V PM10 CER TUB
2030	4806 124 47069	CAP FLM MPES CI 63V 100N PM10
2031	4806 122 17012	CAP 1N 50V PM10 CER TUB
2031	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2032	4806 122 17012	CAP 1N 50V PM10 CER TUB
2032	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2033	4806 124 47049	CAP EL UG AL CI 10V 470U PM20
2034	4806 124 47049	CAP EL UG AL CI 10V 470U PM20

ITEM	CÓDIGO	DESCRICAO
2102	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2106	2020 801 00022	VARIAVEL DE SINT 2XAM/2XFM
2114	4806 122 37292	CCER SM 0805 NP0 50V 330P PM5
2409	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2414	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2415	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2416	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2422	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2431	4806 120 17376	CAP 470P 50V PM10 CER TUB
2433	4806 122 17007	CAP 10N 16V PM20 CER TUB
2549	4806 120 47369	CAP FLM MPES CI 63V 470N PM10
2550	4806 120 47369	CAP FLM MPES CI 63V 470N PM10
2558	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2559	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2564	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2565	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2566	4806 124 47069	CAP FLM MPES CI 63V 100N PM10
2567	4806 124 47069	CAP FLM MPES CI 63V 100N PM10
2570	4806 124 47069	CAP FLM MPES CI 63V 100N PM10
2571	4806 124 47069	CAP FLM MPES CI 63V 100N PM10
2576	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2577	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2597	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2598	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2803	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2804	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2805	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2806	4806 120 57025	CCER SM 0805 NP0 50V 82P PM5
2811	4806 122 37293	CCER SM 0805 NP0 50V 33P PM5
2812	4806 122 37285	CCER SM 0805 NP0 50V 10P PM5
2815	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2828	4806 122 37296	CCER SM 0805 NP0 50V 47P PM5
2833	4806 122 37295	CCER SM 0805 NP0 50V 470P PM5
2834	4806 122 37291	CCER SM 0805 NP0 50V 270P PM5
2835	4806 122 37295	CCER SM 0805 NP0 50V 470P PM5
2843	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2844	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2845	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2848	4806 122 37282	CCER SM 0805 NP0 50V 100P PM5
2849	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2850	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2870	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2871	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2872	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2873	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2874	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
2875	4806 122 37288	CCER SM 0805 NP0 50V 220P PM5
3008	4806 111 97095	RST SM 0805 RC11 470R PM5
3015	4806 111 97093	RST SM 0805 RC11 10R PM5
3017	4806 111 97095	RST SM 0805 RC11 470R PM5
3022	2322 750 64708	RESISTOR FUSIVEL SMD 4R7 PM5
3026	4806 111 97095	RST SM 0805 RC11 470R PM5
3028	4806 111 97096	RST SM 0805 RC11 4R7 PM5
3030	4806 111 97095	RST SM 0805 RC11 470R PM5
3032	4806 111 97095	RST SM 0805 RC11 470R PM5
3101	2120 363 90064	TRIMPOT CARB LIN 50K H EVN-D8A
3400	4806 111 97095	RST SM 0805 RC11 470R PM5
3423	4806 111 97095	RST SM 0805 RC11 470R PM5
3424	4806 111 97095	RST SM 0805 RC11 470R PM5
3425	4806 111 97095	RST SM 0805 RC11 470R PM5
3426	4806 111 97095	RST SM 0805 RC11 470R PM5
3431	4806 116 97057	RST SM 0805 RC11 47K PM5
3432	4806 116 97057	RST SM 0805 RC11 47K PM5
3439	4806 111 97092	RST SM 0805 RC11 100R PM5

ITEM	CÓDIGO	DESCRICAO
3440	4806 111 97092	RST SM 0805 RC11 100R PM5
3463	4806 111 97092	RST SM 0805 RC11 100R PM5
3468	4806 111 97092	RST SM 0805 RC11 100R PM5
3487	4806 116 97048	RES FIX SM 0805 ERJ6G 120K PM5
3488	4806 111 97093	RST SM 0805 RC11 10R PM5
3537	4806 116 57134	RES FIX MFILM SFR16 A 39K PM5
3611	4806 116 97057	RST SM 0805 RC11 47K PM5
3617	4806 111 97092	RST SM 0805 RC11 100R PM5
3620	4806 116 97057	RST SM 0805 RC11 47K PM5
3621	4806 116 97057	RST SM 0805 RC11 47K PM5
3745	4806 111 97093	RST SM 0805 RC11 10R PM5
3800	4806 111 97096	RST SM 0805 RC11 4R7 PM5
3810	4806 116 57497	RES 4R7 NFR25 PM5 MET FILM
3817	4806 116 97057	RST SM 0805 RC11 47K PM5
3829	4806 111 97092	RST SM 0805 RC11 100R PM5
3837	4806 111 97095	RST SM 0805 RC11 470R PM5
3838	4806 111 97095	RST SM 0805 RC11 470R PM5
3839	4806 111 97095	RST SM 0805 RC11 470R PM5
3840	4806 111 97095	RST SM 0805 RC11 470R PM5
3844	4806 111 97092	RST SM 0805 RC11 100R PM5
3845	4806 111 97093	RST SM 0805 RC11 10R PM5
3848	4806 116 97057	RST SM 0805 RC11 47K PM5
3852	4806 116 97057	RST SM 0805 RC11 47K PM5
3855	2120 661 00018	POTENCIOM DISC 4R6 30V PM25
3859	4806 116 97057	RST SM 0805 RC11 47K PM5
3861	4806 116 97057	RST SM 0805 RC11 47K PM5
3863	4806 110 97098	RES 3R3 NFR25 PM5 MET FILM
3871	4806 111 97095	RST SM 0805 RC11 470R PM5
3872	4806 116 97057	RST SM 0805 RC11 47K PM5
3878	4806 111 97095	RST SM 0805 RC11 470R PM5
3879	4806 116 97057	RST SM 0805 RC11 47K PM5
3882	4806 111 97092	RST SM 0805 RC11 100R PM5
5101	3140 108 20430	BOBINA FM
5104	3103 308 20990	BOBINA FM 2,5 TURNS ALUMINI0
5105	3140 118 20011	BOBINA OSC-OM 270UH VM
5106	3140 107 33821	BOB IFT-AM 7MM 146/5 180P Q90
5107	2422 549 41126	KIT FILTRO CER B-PASS 100MHZ
5108	3140 107 33591	BOB IFT-AM 7MM 146T 180P Q110
5111	2422 549 44265	INDUTOR VAR. 7MM 7P 960U PM5
5401	2422 535 94279	BOB FIX EL0305 CI 100U PM5
5803	3198 018 11081	CCN - BOBINA FIXA 1U0 PM5 A 02
6001	4806 130 37589	DIODO SMD BAS316
6002	4806 130 37589	DIODO SMD BAS316
6003	4806 130 37589	DIODO SMD BAS316
6004	9334 515 80673	DIODO RETIF STD 1N4003
6005	9334 515 80673	DIODO RETIF STD 1N4003
6006	9334 515 80673	DIODO RETIF STD 1N4003
6007	9334 515 80673	DIODO RETIF STD 1N4003
6008	9340 548 47115	DIODO ZENER SMD PDZ 3.3B
6010	4806 130 37589	DIODO SMD BAS316
6101	4806 130 37589	DIODO SMD BAS316
6102	4806 130 37589	DIODO SMD BAS316
6400	9340 548 47115	DIODO ZENER SMD PDZ 3.3B
6401	4806 130 37432	DIODO SINAL SM BAV99
6403	9319 001 16682	LED VM RAD TLUR2400
6550	4806 130 37589	DIODO SMD BAS316
6551	4806 130 37589	DIODO SMD BAS316
6552	4806 130 37589	DIODO SMD BAS316
6553	9322 033 20682	LED VS TLHG4405
6554	9322 146 69682	LED VS TLHO4400
6877	4806 130 37589	DIODO ZENER SMD PDZ 3.9B
7000	9331 976 30126	TRANS BIP SINAL BC547B
7001	9322 137 77682	CIR. INTEGRADO TDA7449
7002	4806 130 47228	TRANS BIP SINAL BC337-25

ITEM	CÓDIGO	DESCRICAO
7004	9322 062 95682	CI ANAL AMPLIF TA8227P
7005	4806 130 47228	TRANS BIP SINAL BC337-25
7006	4806 130 47228	TRANS BIP SINAL BC337-25
7007	4806 130 47228	TRANS BIP SINAL BC337-25
7008	4806 130 47333	TRANS BIP SINAL BC327-25
7009	4806 130 47498	TRANS BIP SINAL BC557B
7010	9331 976 30126	TRANS BIP SINAL BC547B
7101	9350 688 30118	CI ANAL AM/FM SM TEA5711T/N2
7102	4806 130 47473	TRANS BIP SINAL SM BC847B
7106	4806 130 47498	TRANS BIP SINAL BC557B
7400	3140 110 50740	C.I. TMP87CK20AF-23AZ1565
7410	4806 130 47473	TRANS BIP SINAL SM BC847B
7411	4806 130 47473	TRANS BIP SINAL SM BC847B
7412	9322 131 04668	CIRC. INTEG SM M24C01-WMN6
7413	3140 110 50720	DISPLAY LCD LE-06153AP (SMGK)
7415	4806 130 47473	TRANS BIP SINAL SM BC847B
7416	4806 130 47473	TRANS BIP SINAL SM BC847B
7417	4806 130 47483	TRANS BIP SINAL SM BC857B
7552	4806 130 47473	TRANS BIP SINAL SM BC847B
7553	4806 130 47473	TRANS BIP SINAL SM BC847B
7554	4806 130 47473	TRANS BIP SINAL SM BC847B
7555	4806 130 47473	TRANS BIP SINAL SM BC847B
7556	4806 130 47473	TRANS BIP SINAL SM BC847B
7557	4806 130 47473	TRANS BIP SINAL SM BC847B
7558	9333 730 00653	CI DIG CSI HEF4069UBT
7559	4806 130 47473	TRANS BIP SINAL SM BC847B
7560	4806 130 47483	TRANS BIP SINAL SM BC857B
7800	9352 642 17557	CI SMD SAA7325H/M2B
7802	4806 209 87773	PC74HCU04T CIRC.INTEGRADO
7803	9322 004 16685	TRANSISTOR DE SINAL BC807-40
7804	9339 848 80668	CI SMD LM358DT
7807	9339 672 70685	TRANSISTOR DE SINAL BC847C
7808	9352 628 49112	CI TDA7073A/N4
7809	9352 628 49112	CI TDA7073A/N4
7810	9350 721 10115	CI SMD TDA1308T/N1
7875	4806 130 47473	TRANS BIP SINAL SM BC847B
8105	3139 110 34650	CABO FLAT 05P/400/05P AZ1550
8400	3139 110 34500	CABO FLAT 13P/140/13P AD AZ15
8401	3139 110 34480	CABO FLAT 07P/140/07P AD AZ15
8402	3139 110 34470	CABO FLAT 07P/080/07P AD
8500	3139 110 34490	CABO FLAT 11P/180/11P BD AZ15
8625	3139 110 33350	CJCB FFC AD 06P 180
8800	3139 110 34360	CABO FLAT 06P/280/06P AD AZ15.
8801	8203 303 82060	CJCB 6P EH/PH 50MM AZ-PAM
8801	3139 110 33350	CJCB FFC AD 06P 180
9461	2422 549 43306	BOBINA 100MHZ 86R BEAD EMI
9463	4806 157 57222	BOB FIX STD LAL02 A 2U2 PM5
9464	2422 535 97315	BOB FIX STD LAL04 A 1U PM20

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SERVICE NEWSLETTER

05.01 TYPENUMBER(S) : **AE6775, AE6780**

SYMPTOM : IRIS CODE D 1 1 3
No battery contact for some battery types only.

CURE : The ribs for fixing the battery contact wire are too close together for batteries with large plus-pole diameter. For such battery types the plus-pole of the upper battery will not contact the wire properly.
Service solution: Cut the inner ribs with a knife

REMARKS : Modified Cabinets are used in production from week 9947 onwards.

05.02 TYPENUMBER(S): **AZ1005**

INFORMATION : Correction to the Service Manual, Partslist
The codenumber for the CD Door Switch is missing.
The switch is available with codenumber 4822 278 90739.

REMARKS :

05.03 TYPENUMBER(S) : **AZ1009, AZ1010, AZ1015**

SYMPTOM : IRIS CODE 3 1 6 1
The Bracket-Cassette (item 502 for AZ1009, AZ1010 resp. item 501 for AZ1015) is broken at the support area for the Cassette Door Spring (item 404).

CURE : Tooling has been modified (increased wall thickness and added radius at the corner).
Improved Bracket-Cassettes are available with codenumber 3103 304 64080.

REMARKS : Modified parts are used in production from week 9945 onwards.

05.04 TYPENUMBER(S) : **AZ1100, AZ1101, AZ1102, AZ1103, AZ1104**

INFORMATION : Correction to the Service Manual, Mechanical Partslist
Position number 26 is listed twice. Correct is:

24	4822 410 10634	Band/Function Knob
26	4822 410 10632	Volume Knob

REMARKS :

05.05 TYPENUMBER(S) : **AZ1560, AZ1565**

INFORMATION : Correction to the Service Manual, Electrical Partslist

On Control board:

2400	5322 126 10223	47nF 10% X7R 63V
3422	4822 051 20332	3.3kΩ 5% 0.1W
3483	4822 051 20105	1MΩ 5% 0.1W
3487	4822 051 20124	120kΩ 5% 0.1W

On Feature board:

2556	4822 126 14585	100nF 20% X7R 16V
2557	4822 126 14585	100nF 20% X7R 16V
2574	4822 126 13188	15nF 20% X7R 50V
2575	4822 126 13188	15nF 20% X7R 50V
3593	4822 051 20683	68kΩ 5% 0.1W
3594	4822 051 20683	68kΩ 5% 0.1W
3612	4822 117 12521	68Ω 5% 0.1W

REMARKS :

05.06 TYPENUMBER(S) : **AZ2750, AZ2755**

INFORMATION : Correction to the Service Manual, Mechanical Partslist
The codenumber for the Motor Pulley (item 116 on tape deck assy) should read 4822 528 81493.

REMARKS :

For internal use only

PHILIPS

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Published by:
Service Department Audio Systems

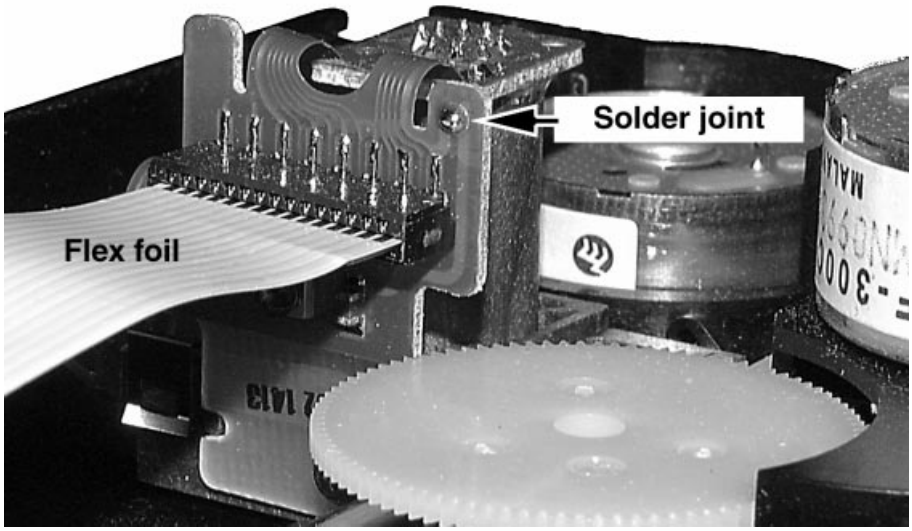
IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

10.01 TYPENUMBER(S): **CD-DRIVE VAM2201 – 4822 691 10772**

INFORMATION : The laser diode of the VAM2201 is protected against ESD by a solder joint which shortcircuits the laser diode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connecting the flex foil to the drive.



REMARKS : An addendum sheet will be packed to the CD drive, pointing out the above modification.

10.02 TYPENUMBER(S): **FW830C, FW840C, FW870C, FW878C, FW890P, FW898W**

INFORMATION : Additional information to Service Newsletter item AS99.08.03.

Although not mentioned explicitly, the EEPROM must be cleared after hardware modification.
The complete procedure is described on the next page.
Step 5, clearing the EEPROM via the Service Test Program "EEPROM Format Test", has been added.

SYMPTOM : **IRIS CODE M 1 7 0**

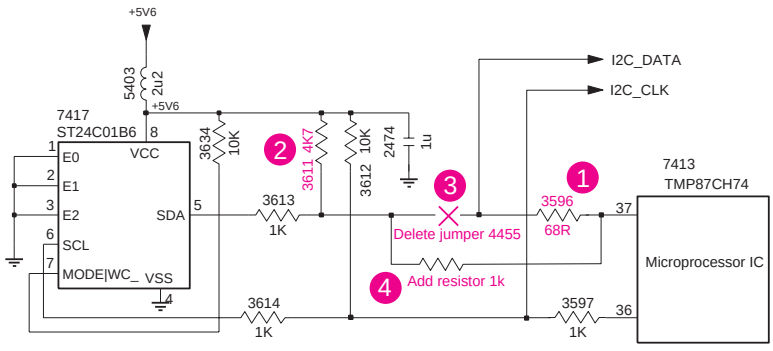
The set behaves strangely after switching it on via Standby button or mains supply re-connection. Strange behaviour includes:

- Loss of Tuner preset stations or tuning grid returns to 9kHz condition
- When changing source to Tuner the set stalls for a few seconds and may or may not switch to Tuner mode
- CD carousel rotates or the CD tray moves outwards
- Tape deck motors start to run or relay starts activation and the deck starts engaging and disengaging
- During this strange behaviour condition the set does not go into demo mode

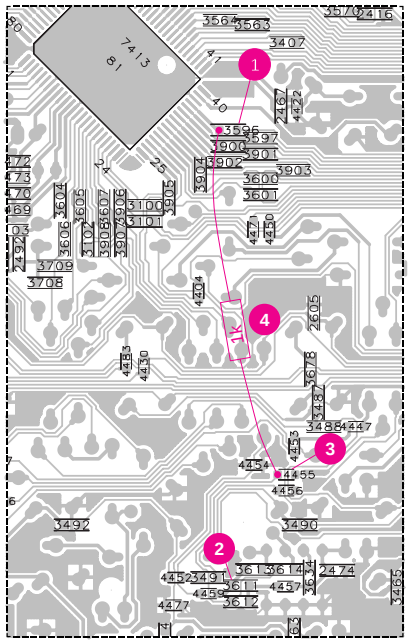
CURE : The problem is caused by corrupted data being written into the EEPROM IC 7417 via the I2C_DATA line. The data corruption can be verified and cleared by performing an “EEPROM Format Test” in the Service Test Program.

The problem can be solved by the following hardware modification on the front board:

1. Ensure (change if necessary) that resistor 3596 is 68Ω (4822 117 12521)
2. Change resistor 3611 to 4.7kΩ (4822 051 20472)
3. Remove SMD jumper 4455
4. Add resistor 1kΩ (4822 050 11002) with insulated leads between pin 37 of microprocessor IC 7413 and junction of resistors 3611 and 3613 (left solder pad of jumper 4455)
5. Clear the corrupted data in the EEPROM as follows:
   a) Enter the Service Test Program by holding the **PLAY ▶** and **AUX** button depressed while switching on the mains supply
   b) Perform an “EEPROM Format Test” by pressing the **SEARCH ◀◀** button to reset the EEPROM to default data
   c) Exit the Service Test Program by disconnecting the mains supply



Eeprom connection to the Microprocessor IC



Portion of the Front board (copper side view)

REMARKS :

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IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

09.01 TYPENUMBER(S): **FR960, FR970, MX975D**

SYMPTOM : **IRIS CODE C 2 8 5**
When the set is tuned to a station with RDS-EON, and this station sends EON information that another station is currently broadcasting traffic announcements TA, the set might switch to stand-by mode for approx. 4 seconds. During these 4 seconds there is no voltage available on the AC mains outlets.
Please note that the phenomenon can also occur when the set is playing other sources (i.e. CD), as the tuner is continuously monitoring the RDS and EON signal.

CURE : The problem is solved by replacing microprocessor IC 7415 (located on front board) by the **new version v35** – **3103 308 83880**.

REMARKS : New microprocessors are used in production from week 9941 onwards. The software version can be read out via the service test program. Versions v35 and higher are OK.

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LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

08.01 TYPENUMBER(S): **FW350C, FW390C, FW391C, FW396C, FW398C, FW910R, FW910SR, FW545C, FW548C, FW555C, FW585C, FW590C, FW595C, FW930, FW930R, FW768P, FW798W**

SYMPTOM : IRIS CODE C 5 1 4
CD does not play and the display shows “DISC NOT FINALIZED”.

CURE : The problem happens mainly with Brazil’s Millennium disc and is resolved by upgrading the software of the Front microprocessor IC.

The service codes for the new ICs are:
1. 9965 000 01676 (version 25) for FW350C, FW390C, FW391C, FW396C, FW398C, FW910R and FW910SR
2. 9965 000 01977 (version 35) for FW545C, FW548C, FW555C, FW585C, FW590C, FW595C, FW930 and FW930R
3. 9965 000 01978 (version 32) for FW768P and FW798W

REMARKS :

08.02 TYPENUMBER(S): **FW748P, FW768P, FW798W**

INFORMATION : Corrections to the Service Manual, AF6 board – Dolby Prologic (DPL) circuit diagram and partlist

For FW748P, FW768P, FW798W:
Change 2756 4822 124 40746 0.22µF 20% 63V
2757 4822 124 40746 0.22µF 20% 63V

For FW748P only:
Change 2789 5322 122 32531 100pF 5% 50V (partslist only)

REMARKS :

08.03 TYPENUMBER(S): **FW830C, FW840C, FW870C, FW878C, FW890P, FW898W**

SYMPTOM : **IRIS CODE M 1 7 0**

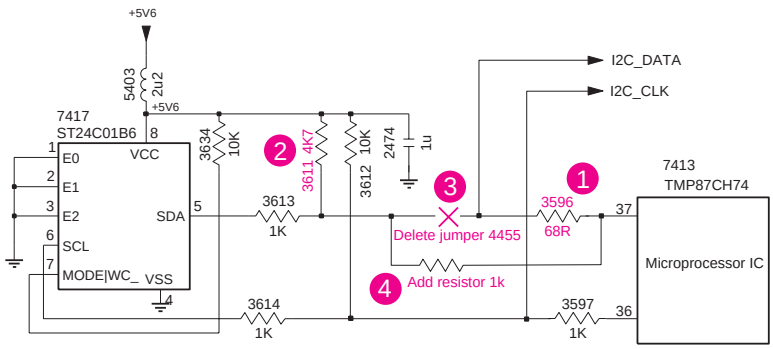
The set behaves strangely after switching it on via Standby button or mains supply re-connection. Strange behaviour includes:

- Loss of Tuner preset stations or tuning grid returns to 9kHz condition
- When changing source to Tuner the set stalls for a few seconds and may or may not switch to Tuner mode
- CD carousel rotates or the CD tray moves outwards
- Tape deck motors start to run or relay starts activation and the deck starts engaging and disengaging
- During this strange behaviour condition the set does not go into demo mode

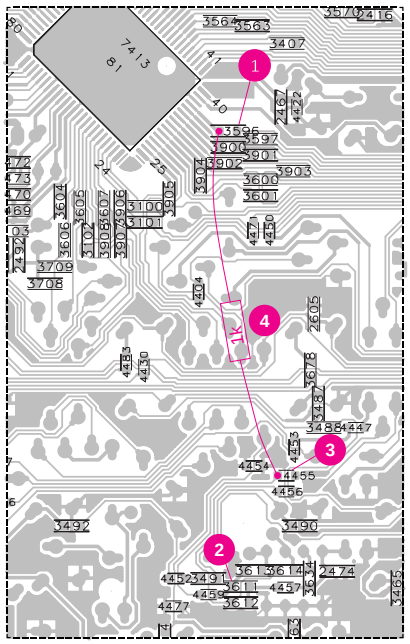
CURE : The problem is caused by corrupted data being written into the EEPROM IC 7417 via the I2C_DATA line. The data corruption can be verified and cleared by performing an “EEPROM Format Test” in the Service Test Program.

The problem can be solved by the following hardware modification on the front board:

1. Ensure (change if necessary) that resistor 3596 is 68Ω (4822 117 12521)
2. Change resistor 3611 to 4.7kΩ (4822 051 20472)
3. Remove SMD jumper 4455
4. Add resistor 1kΩ (4822 050 11002) with insulated leads between pin 37 of microprocessor IC 7413 and junction of resistors 3611 and 3613 (left solder pad of jumper 4455)



Eeprom connection to the Microprocessor IC



Portion of the Front board (copper side view)

REMARKS :

ISSUE PA99.04 (99-10-13)

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Service Department Portable Audio

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

04.01 TYPENUMBER(S): **AJ3290**

INFORMATION : The Clock set button can get stuck inside when too much force is applied on the button. A rib will be added on the top cabinet as stopper.

REMARKS : Modification will be implemented in production from week 9948 onwards.

04.02 TYPENUMBER(S): **AJ3940**

INFORMATION : Additional information to Service Newsletter PA99.02.04.
The transformer hum can be further reduced by adding 2 pieces of sponge (about 20x15x2mm) between transformer and shield plate.

REMARKS : Modification has been implemented in production from week 9902 onwards.

04.03 TYPENUMBER(S): **AZ1010**

INFORMATION : On special request the following parts were added to the service partslist:

pos	code number	article description
507	3103 307 96350	button set CD1 lacquered
511	3103 307 96360	button set CD2 lacquered

REMARKS :

04.04 TYPENUMBER(S): **AZ2000, AZ2010**

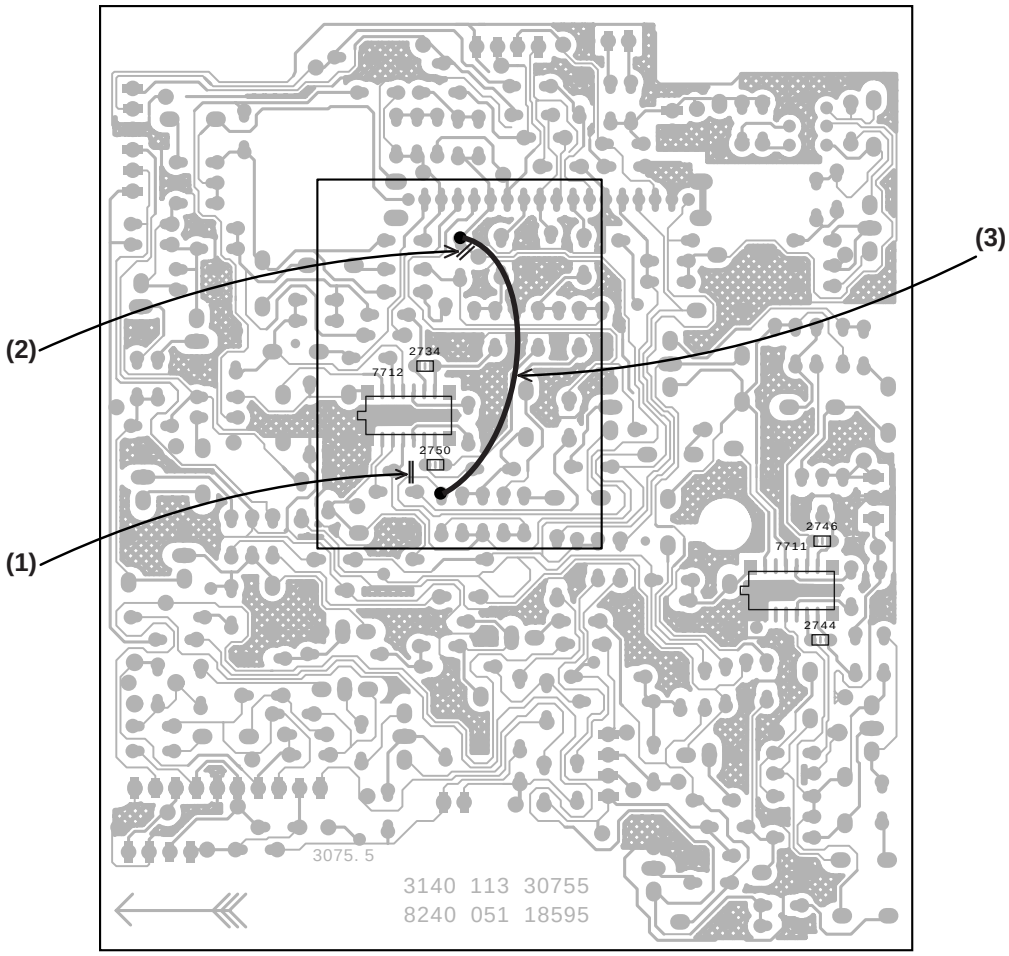
INFORMATION : On the rear cabinet, the ribs for holding the Battery Spring (item 459) are broken. In order to strengthen the ribs their wall thickness was increased and a radius was added.

REMARKS : Modification has been implemented in production from week 9934 onwards.

04.05 TYPENUMBER(S) : **AZ2750, AZ2755**

SYMPTOM : **IRIS CODE C 1 4 X**
Abnormal noise is audible in TAPE mode.

CURE : The signal paths on the Recorder board are too close.
Solution is to cut 2 copper tracks on the printed board and to connect resistor 3729 and capacitor 2736 with a wire (for details see diagram below).



Recorder Board - Layout Diagram
(PCB code : 3140 113 30755)

REMARKS : Modification has been implemented in production from week 9922 onwards.
This information will be followed by Service Information A99-577 (3140 785 22030).

04.06 TYPENUMBER(S): **AZ2750**

INFORMATION : In course of production the source selection IC TC9145 (pos. U1) has been replaced by the new type PT233 (9655 000 01767).
Schematic and layout diagram of the Main Board had to be adapted accordingly. The new diagrams can be found in Service Information A99-577 (3140 785 22030).

REMARKS : The new IC is used in production from week 9938 onwards with factory change code KZ02.

04.07 TYPENUMBER(S): **AZ7495, AZ7595, AZ7794, AZ7894**

INFORMATION : Correction to Service Manual, Accessories:
The code number for the External Battery Box “AY3770” should read 4822 256 10592.

REMARKS :

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LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

07.01 TYPENUMBER(S): **FW350C/34, FW390C/34, FW398C/34**

SYMPTOM : IRIS CODE 1 2 1 2
FM1 range is lost when the set is switched off.

CURE : The FM1 range (65.81-74MHz) can be turned on via the procedure published in Service Newsletter AS99.05.03.

However, due to a software problem, some sets disable the FM1 range again when the set is switched off.

The problem can be resolved by replacing the microprocessor by the new version “23”. The ordering code reads 9965 000 01676.

REMARKS :

07.02 TYPENUMBER(S): **FW754P, FW765P, FW795W**

INFORMATION : Corrections to the Service Manual, partslist

1. Service code for Rucksack of “Power4 Module” should read:
   4822 256 10575 Rucksack 4 Channel

2. FW795W/37 only: Service code for item 224
   (Exploded view, page 14-2) should read:
   4822 454 13447 Orn Display DPL only for FW795W/37

REMARKS :

07.03 TYPENUMBER(S): **MC115**

INFORMATION : On special request the following parts were added to the service partslist:

pos	code number	article description
506	3103 304 65290	button set “power”
507	3103 304 65390	cap-IR
508	3103 304 65280	button set + cap
509	3103 304 65310	button “surround”
511	3103 304 65280	button set + cap
512	3103 304 65300	button set “volume”

REMARKS :

07.04 TYPENUMBER(S): **MC145**

INFORMATION : On special request the following parts were added to the service partslist:

pos	code number	article description
509	3103 304 66660	button set “power”
511	3103 304 65390	cap-IR
513	3103 304 66670	button set “volume”
514	3103 304 66380	button set + cap
514a	3103 304 66380	button set + cap
516	3103 304 65310	button “surround”

REMARKS :

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IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

06.01 TYPENUMBER(S): **CD713, CD723, CD753**

INFORMATION : Above mentioned sets use CD-Short Loader MK3.
This module is equipped with CD-drive **VAM1201** – 4822 691 10615.
Based on repair feedback it has been found that sometimes the VAM1201 is replaced by CDM12.1 – 4822 691 30278.

Although drives seem to be identical, it is not allowed to replace VAM1201 by CDM12.1. The higher clamping force of the CDM12.1 might cause problems during open/close.

REMARKS :

06.02 TYPENUMBER(S): **FW399V**

SYMPTOM : **IRIS CODE 1 3 5 X**
Pictures skip and jump when playing a Video-CD.

CURE : The problem can be solved by the following modification on the Servo Board:
1. Add elcap 2861 22µF 16V (4822 124 41796) into the location provided on the printed board
2. Replace bare wire 9015 with resistor 3872 47Ω (4822 116 52195)

REMARKS :

06.03 TYPENUMBER(S): **FW399V/21/21M**

SYMPTOM : **IRIS CODE C 5 1 X**
Sometimes the set does not read the TOC of some critical CDs.
“NO DISC” is shown on the display.

CURE : The problem can be solved by the following modification on the Main Combi Board:
1. Delete elcap 2342 100µF 10V

REMARKS : Above modification is implemented in production from week 9932 onwards.

06.04 TYPENUMBER(S): **FW850C, FW855C, FW860P, FW880P, FW880W**

SYMPTOM : **IRIS CODE 1 1 3 X**
Program number is not displayed for Tuner frequency 100.2MHz.

CURE : The problem is caused by software. Although the program number is not displayed, the program number can still be selected.
An improved software (version 26) for microprocesssor IC 7461 TMP87CS71F is available via service code 4822 900 11253.

REMARKS :

For internal use only

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ISSUE AS99.05 (99-08-10)

Published by:
Service Department Audio Systems

IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

05.01 TYPENUMBER(S): **AS670/34, AS675/34**

SYMPTOM : IRIS CODE 3 1 3 X
In standby mode, the clock display is switched off after a while.

CURE : There is nothing wrong with the set.
Switching off the display is part of the “Lower Power Standby Feature”, described in chapter 11 of the Service Manual.

REMARKS :

05.02 TYPENUMBER(S): **CDC775**

INFORMATION : From production week 9930 onwards a new microprocessor (mask 2) has been introduced:

pos.	service code	article description
7401	3139 110 51260	TMP87CP71F with marking “775S52161”

The new µP solves CD-Recorder related problems and reduces the FTD brightness to the level of other products from the Home Cinema range.

The introduction of the new microprocessor is accompanied by some hardware changes on the DAC/AF-board.

The following components have been added:

pos.	service code	article description
3963	4822 051 20479	47Ω 5% 0.1W
3975	4822 116 52176	10Ω 5% 1/6W
9919		Bare Wire

REMARKS : For location of components see circuit diagram and component layout. New components have already been foreseen in these drawings, but were not used, yet.

05.03 TYPENUMBER(S): **FW350C/34, FW390C/34, FW398C/34, FW545C/34, FW548C/34, FW590C/34, FW768P/34, FW830C/34, FW878C/34, FW898W/34, MZ7/34**

SYMPTOM : IRIS CODE 1 2 1 X
FM 65.81-74MHz cannot be tuned on the set

CURE : All Mini Systems 1999 versions /34 are set to the default FM range of 87.5-108MHz when leaving the factory.

The lower FM1 range of 65.81-74MHz can be turned on by holding the undermentioned keys depressed, while switching on the mains supply:

a) “Tuner” & “Search Up” for all models except the MZ7/34
b) “Tuner” & “Next” for MZ7/34 only

The display shows “FM1 ON”.

REMARKS : By repeating the procedure the FM1 range will be switched off again.

05.04 TYPENUMBER(S): **FW399V**

INFORMATION : Service Manual, correction/update of the partslist

1) In the parts list of page 12-8 the service code for item 7202, IC AT27C020-12PC, should read 3139 110 52240 instead of 8239 210 51830.

2) The following parts of the Loudspeaker Box are now available as service spareparts:

service code	article description
9965 000 00757	TWEETER
9965 000 00758	WOOFER
9965 000 00795	BUZZER W/WIRE ASSY
4822 464 10523	CLOTH FRAME ASSY

REMARKS :

05.05 TYPENUMBER(S): **FR960, FR970, MX975D**

INFORMATION : Correction to the Service Manual, Electrical partslist
Monobard FR960 (page 13-4) and Monobard FR970 (page 14-4)

The following items should read:

pos.	service code	article description
3587	4822 051 20392	3.9kΩ 5% 0.1W
3588	4822 116 52276	3.9kΩ 5% 0.5W
3593	4822 051 20472	4.7kΩ 5% 0.1W
3594	4822 051 20472	4.7kΩ 5% 0.1W
3597	4822 116 52289	5.6kΩ 5% 1/6W
3598	4822 116 52289	5.6kΩ 5% 1/6W

REMARKS : Electrical diagram is correct (page 10-4).

05.06 TYPENUMBER(S): **FR970**

INFORMATION : Correction to the Service Manual, Exploded View Partslist (page 12)
The service codenumber for item 14 should read:
3104 217 52260 “Window Display” only for FR970/01B/17
3104 217 52660 “Window Display” only for FR970/01

REMARKS :

05.07 TYPENUMBER(S): **MC165, MC175**

INFORMATION : Correction to the Service Manual, Electrical partslist
The service codenumbers of the Mains Transformers have been mixed up. They should read:
4822 146 11104 for /01 and /11 versions
4822 146 11105 for /02, /05, /10 and /14 versions
4822 146 11106 for /37 version

REMARKS :

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ISSUE PA99.03 (99-08-03)

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Service Department Portable Audio

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LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

03.01 TYPENUMBER(S) : **GENERAL**

INFORMATION : Service Information A99-572 (3140 785 22022) is published to introduce the survey of service spareparts for those typenumbers in category 1, for which no Service Manual has been published.

In this additional issue, the following typenumbers are new:
Portable radio : AE2180, AE6776, AE6780
Clock radio : AJ3141, AJ3142, AJ3143, AJ3144, AJ3145
Radio Cass. Recorder : AQ4150/..S, AQ5150/..S
Headphone Stereo : AQ6411, AQ6412, AQ6413, AQ6414, AQ6682

REMARKS :

03.02 TYPENUMBER(S) : **AZ1120**

INFORMATION : In course of production, the following parts have been changed to improve DBB performance:
• Capacitor 2503 and 2504 changed to 68nF (5322 121 42465)

REMARKS : Modification has been implemented in production from week 9921 onwards.

03.03 TYPENUMBER(S) : **AZ2000, AZ2010**

SYMPTOM : IRIS CODE 2 1 1 3
Sets are not working on some batteries (e.g. Energizer batteries) because the battery plate fails to contact with the batteries.

CURE : The cabinet wall holding the battery plate is too thick.
The simplest service solution is to add a washer (of 0.5 - 0.7mm thickness) behind the battery plate to compensate the tolerance.
On long term, the battery plate will be modified to increase the height of the contact point.

REMARKS : Modification has been implemented in production from week 9926 onwards.

03.04 TYPENUMBER(S): **AZ2402, AZ2407**

SYMPTOM : **IRIS CODE C 2 1 2**
No FM reception at the higher end frequencies of the FM-band, when Volume is set to maximum and MODE button is pressed.

CURE : Problem can be solved by changing following parts:
- Capacitor 2322 and 2326 changed to 22µF (4822 124 81151)
- Resistor 3223 changed to 150Ω (4822 116 83868)

REMARKS : Modification has been implemented in production from week 9923 onwards.

03.05 TYPENUMBER(S): **AZ2402**

SYMPTOM : **IRIS CODE 6 1 1 X**
The Power ON/OFF switch 1496 or resistor 3594 is burst due to high transient current.

CURE : Additional to Service Newsletter PA99.02.11, on long term the layout of the Front board will be modified and following parts will be changed or added:
- Resistor 3456 changed to 15kΩ (4822 116 52244)
- Resistor 3457 changed to 5.6kΩ (4822 116 52289)
- Resistor 3516, 47Ω (4822 116 52195) added
- Diode 7483 and 7484, 1N4148 (4822 130 30621) added

REMARKS : Modification will be implemented in production from week 9932 onwards.
This information will be followed by Service Information A99-573 (3140 785 22023).

03.06 TYPENUMBER(S): **AZ2407**

SYMPTOM : **IRIS CODE 6 1 1 X**
The Power ON/OFF switch 1496 or resistor 3594 is burst due to high transient current.

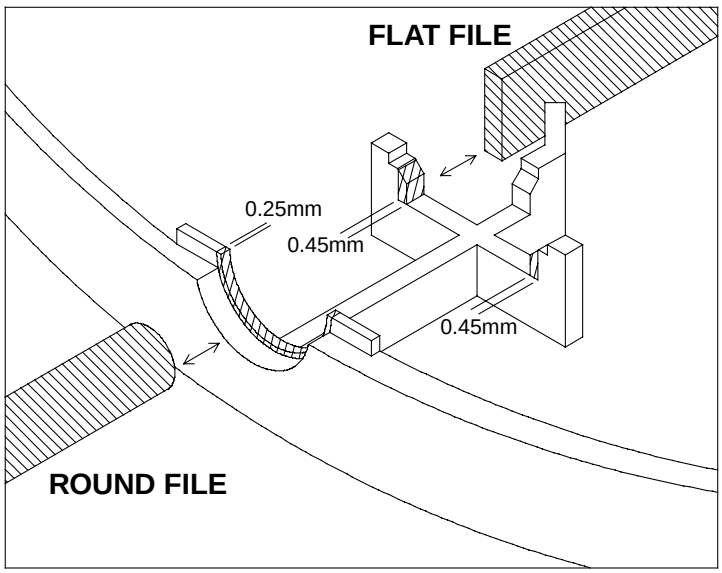
CURE : Additional to Service Newsletter PA99.02.11, on long term the layout of the Front board will be modified and following parts will be changed or added:
- Resistor 3456 changed to 15kΩ (4822 116 52244)
- Resistor 3457 changed to 5.6kΩ (4822 116 52289)
- Resistor 3516, 47Ω (4822 116 52195) added
- Diode 7482 and 7483, 1N4148 (4822 130 30621) added

REMARKS : Modification will be implemented in production from week 9932 onwards.
This information will be followed by Service Information A99-574 (3140 785 22024).

03.07 TYPENUMBER(S): **AZ7381, AZ7382, AZ7383, AZ7481, AZ7482, AZ7483**

INFORMATION : In course of production, the PCB Assembly was changed to PB2 (for details please refer to Service Manual 4822 725 26021).
In the PB2 assembly a smaller headphone jack was used and thus the hole for h/p jack on the cabinet was also made smaller.
The cabinet (4822 449 80201) of the sets produced in earlier stage is no longer available and the new cabinet (4822 449 80266) with smaller jack hole will be delivered as substitute.

As a service solution, for repairing sets with bigger headphone jack, we suggest to enlarge the hole by use of files (see drawing below).



REMARKS :

03.08 TYPENUMBER(S): **MC165, MC175**

INFORMATION : Correction to the Service Manual, Electrical partslist
The service codenumbers of the Mains Transformers have been mixed up. They should read:

4822 146 11104 for /01 and /11 versions
4822 146 11105 for /02, /05, /10 and /14 versions
4822 146 11106 for /37 version

REMARKS :

For internal use only

PHILIPS

ISSUE AS99.04 (99-07-29)

Published by:
Service Department Audio Systems

IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

This newsletter concerns the introduction of the new generation CD recorders.

First of all some issues concerning the new products are presented then the typical new features in 1999 sets and explained, at the end the service approach is given according next schedule:

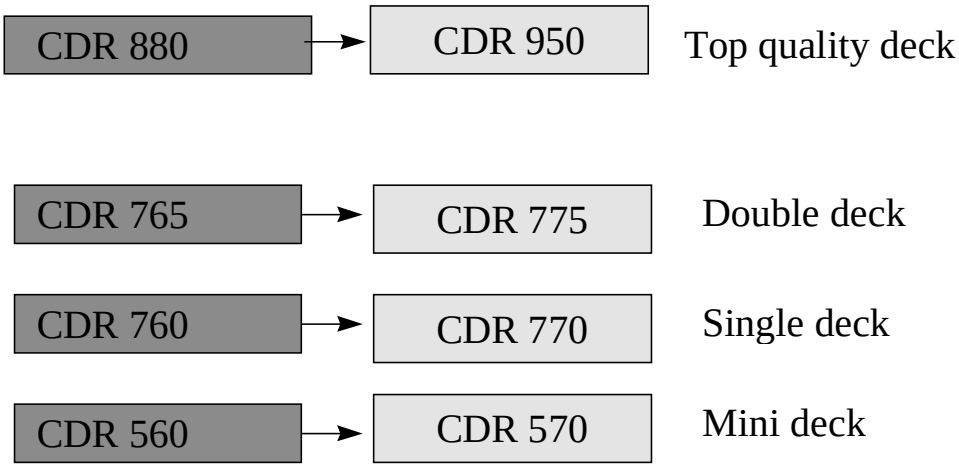
- Introduction
- The 1999 range overview
- The 1999 products
- User interface / interaction
- What is new in all 1999 sets
- Survey of ReWritable(disc) Compatible products in 1999
- Survey of digital out products in 1999
- CD-R(W) Digital Audio discs
- Service approach

Introduction

The 3rd generation CD Recorders have great similarity to the current 1998 range which was based on 3 concepts. First, the high-end CDR880 with a neutral styling to match the installed base of HiFi components of any brand. Secondly, a new styling for the CDR765 and CDR760 to match the Philips CD player line, and thirdly, the separate Mini CDR560/CDR538 to address the Mini systems market.

Range overview + table of stroke versions

Product line-up 1999:



Difference between stroke versions:

CDR TYPE	Europe	AP/ Latam	Japan	Korea	Eastern Europe	USA
950	/00	/01	/06	/13	/14	/17
775	/00	/01	/06	/13	/14	/17
770	/00	/01	/06	/13	/14	/17
570	/00	/01	/06	/13	/14	/17
930	/00	/01	/06	/13	/14	/17
951	/00					
776	/00					

Power supplies:

	West Europe /00	USA /17	Asia Pacific /01	E & C Europe /14	Japan /06	Korea /13
CDR950	230V +/-10% 50 Hz	117V +/-10% 60 Hz	100/110/220/230 V +/-10%	230V +/-10% 50 Hz	100V +/-10% 60 Hz	230V +/-10% 50 Hz
CDR775	80-276V 50-60 Hz	80-150V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz
CDR770	80-276V 50-60 Hz	80-150V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz
CDR570	80-276V 50-60 Hz	80-150V +/-10% 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz
CDR930	80-276V 50-60 Hz	80-150V +/-10% 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz	80-276V 50-60 Hz

High-end CDR950*:

After being very successful with both the CDR870 and CDR880, we have seen the competition enter the market for high-end CD Recorders. Philips will join this market with the CDR950, which will have the Harmonised Design styling, matching other products like the new DVD player, receiver and CD players in 1999. To make the 950 into a serious player in the segment, it will be equipped with high-end specifications for both recording and playback. Together with a maximum of dazzling new features like text editing, this model will be marketed as our 'Flagship' of the range at a target price point of DM 999.-.

Product specific feature overview CDR950:

Successor of CDR880 with e.g. :

Analogue linear power supply (Less Hum & Noise)

SRC & DLR (Direct Line Recording)

High-quality cables

New in 1999:

Harmonised Design (Receivers / CD changer / DVD / VCR)

Fade-in / fade-out (with adjustable timing 10 seconds)

Stereo microphone input (separate or mixed recording with separate level potmeter)

Monitor path (listen to the actual recording or using the SRC for separate)

High-end audio specifications(separate AD / DA converters)

Input / output as CDR880 but with 2 digital coaxial inputs

Renaming the inputs (e.g. change DIGITAL 1 into 'MY DAT RECORDER'

Dual-deck CDR775*:

To continue the success of the current dual-deck CDR765, its successor the CDR775 will surprise you with many new features like the menu-controlled user interface via an easy jog control, text recording and a standby function. The design matches the Audio Systems CD players, but shows significant improvements in many details.

Product specific feature overview CDR 775/CDR776:



Successor of CDR765 with e.g.:

Double-speed recording (internal)

Seamless playback changer

DJ mode (separate play / outputs)

Recording from internal or external sources

Synchronised start recording from external sources

New in 1999:

CD Text recording from internal deck

Normal-speed recording whole disc (Listen mode)

Advanced and easy programming of favourite tracks

(e.g. a program that does not fit can be edited (adding and/or deleting tracks).

Random programming over two discs (CDR765 can only program per disc)

New CD drive in the dual-deck recorder which also offers more functionality (better performance, playing unfinalised discs)

CD drive is able to play unfinalised CDR/RW discs

SRC (11-56 kHz)

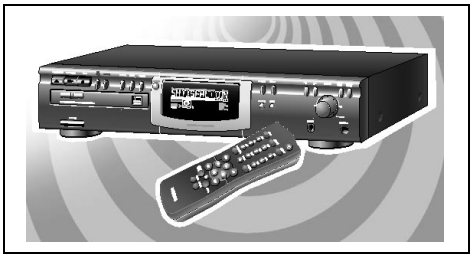
DLR (Direct Line Recording)

Single-deck CDR770*:

The CDR760 will be succeeded by the CDR770, which also benefits from the new featuring of text editing, easy jog and the new user interface. The design also matches that of the Audio Systems CD players.

*) All these models are planned in Black and Champagne versions

Product specific feature overview CDR770



Successor of the CDR 760 with e.g.:

Synchronised start recording of DISC or TRACK

Digital optical, digital coaxial and analogue inputs

Digital coaxial and analogue outputs

New in 1999:

SRC (11-56 kHz)

Direct Line Recording

CD Text input/editing

Multi-track erase (RW)

Scrolling text

Synchronised start of disc recording automatically followed by auto finalise (made CD).

Mini CD Recorder CDR 570/930:

To complete the range for 1999, the CDR560 will be succeeded by the CDR570, which has the same specification as the CDR770. The design remains the same on the outside to match the current Mini Systems, with the exception of the new easy jog control and the menu-controlled user interface.

Product specific feature overview CDR570/ 930



Successor of CDR560 with e.g.:

System remote control for CDR930

New in 1999:

Similar featuring to CDR770 but no headphone output

Matching the FW930C design

Mini systems with CDR (FW930, FW910)

Two mini systems will be created with a bundled CDR.
The CDR930 will be created for bundling together with the FW930 Mini System and the FW910.

Improved user interface / Interaction

General

The aim for CD-R is to make successful CD recording so easy that users can easily remember all the steps needed to create and play their own CDs. This is where user interface design plays a crucial role. Making a recording on CD is a technically complex task for the CD Recorder, but the trick is to keep this complexity away from the user. When the task of recording is analysed, there are very few things that the user has to know and do to make a successful recording. So what are the essential aspects for achieving simple, user-friendly operation?
The display is one of the most important. It constantly shows the status of the CD Recorder and gives relevant information about the current task. It is able to enter into a dialogue with the user, giving relevant information and choices at the appropriate moments, warning and explaining problems when necessary, and informing the user when the task will be complete. In other words, the display gives all the elements of good customer service!
The controls are also important. The easy jog, in particular, makes controlling the CD Recorder quicker and more intuitive by rolling through the tracks of a CD or the choice and selection of tasks.
The 3rd generation of CD Recorders will address a larger, and to some extent less ‘audio-involved’, target group compared with the previous models. This requires a more self-explanatory and consistent user interface.
Together with specialists in the field of Ergonomics and Interactive Design, a new, more self-explanatory, user interface has been designed.

The CD-R is designed to communicate with us as humans. That’s when making your own CD becomes absolute simplicity!

What benefits does it offer?

1) Reduction of nuisance calls. The set will more explicitly show the consumer what was done wrong or what he should do next.
2) Improved ease of use (also the double deck).
3) A very satisfied consumer and a competitive edge versus the competition.
4) Sales force will be able to operate all types of Philips CD Recorders (and Mini sets) as we now follow a similar approach throughout the audio organisation.

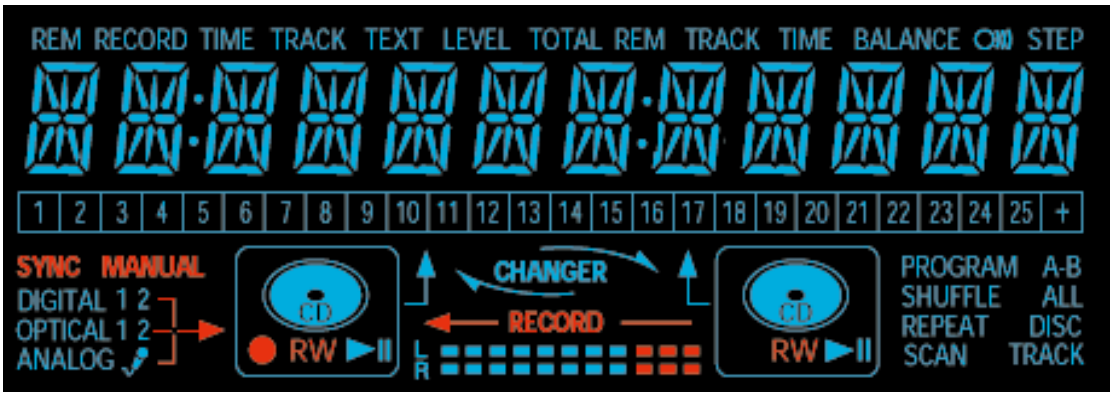
Why do you need it?

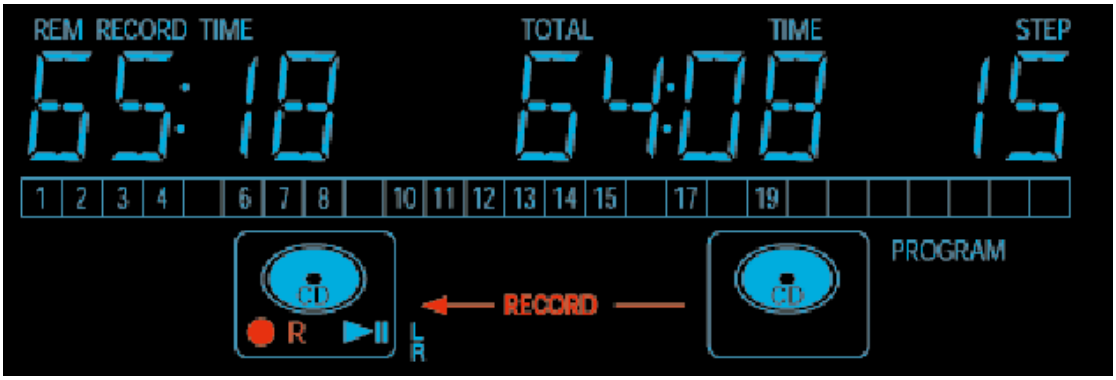
To make issues like Finalising, Unfinalising, Initialising (OPC), Erasing only CD-RW, CD Text (text memory), all the different status & types of discs, as well as the feedback given on the display, clearer and more explicit at the moment you need to know it.

How does it work? (only the major changes are described)

- One RECORD key to start all types of recording (inclusive Finalising and Erasing)
- One REC-TYPE key which displays clearly what recording (-standby) is selected and which is the next key that should be pressed to start.
- Easy jog control for quick and accurate track selection.
- Standby via remote control. Hard On/Off key on front that 'wakes' set in standby. This is very nice when using the CD-R in a stack (e.g. power taken from a receiver). If the receiver is switched on, the CD-R will be in standby unless a CD-R key is touched (RC or front).
- Clear and more functional messages.
- Technical names like CD-SYNC-1 have also been renamed to 'RECORD TRACK' or 'MAKE CD' when recording with CD-SYNC & FINALISE.
- All typical CD functions are available on the front (FWD, BWD, repeat, shuffle, program, scroll)
- Menu access like text input is possible via both remote control and front panel.
- Synchronised start (analogue and digital) is active as standard (no choice needed).

- Scanning (CDR765) is no longer needed.
- Clear status information from the newly designed FTD. (See below):
    - Trackbar that clearly shows the tracks on the disc and what track is active or selected.
    - Disc label shows clearly if a disc is in the tray.
    - Status of set, play, pause, rec.
    - The play modes like ‘Changer’ and ‘DJ-mode’ are clearly visual.
    - Input selection (internal / external) continuously visual.
    - Advanced programming (in STOP mode as well as REC standby)





The display shows an example in program mode:
Left: The remaining recording time is available so the user can judge if the selection will fit on the blank CD.
Middle: When searching a new track to be programmed, it already shows the total amount of time before selecting it.
Right: The number of tracks in the program (steps),
The track bar shows which tracks are programmed.

Remote control*:

With its ergonomic design this new RC enables users to carry out all the necessary control actions from the comfort of their armchair.



For the 1999 range, one remote control will be supplied for both single- and dual-deck recorders. As well as Philips CD Recorders, this remote control can also be used with all Philips CD players by selecting ‘CD’. To avoid damaging the disc recording process, no Recording Finalise and Erase keys are provided.

Functions which can only be activated via the remote control:

- Intro scan function (scanning tracks 10 seconds).
- Switching the recorder into low-power (<6 watt) standby mode.
- Manual writing of a new track number

What is different versus 1998?

From the remote control, it is also possible to control the complete menu using the additional menu keys. (The next / previous keys are used as the easy jog.)

Text input is new and works in the well known way, similar to cellular phones (Handy, GSM).

* planned in black and champagne for CDR950/CDR951

What's new in all the 1999 sets?

- Audio buffer
- CD Text input, recording & editing (album / artist for disc and per track; 60 char.)
- Text scrolling (possibility to display this permanently for dealers and freaks)
- CD Text input via front panel and remote control
- Tray blocking mode to avoid theft of discs on the shop floor - dealer feature
- CD Recorder drive offering more functionality, e.g. CD Text, audio buffer, integration of functions
- Auto finalise CD-R/RW (Make CD!) and Auto unfinalise CD-RW (To avoid ERASE TOC)
- Synchronised start of recording also from ANALOGUE sources
- Digital recording level adjustment and balance setting to correct for differences in volume level between source discs
- Multi-track erase
- Sample Rate Converter 11-56 kHz (DAB = 32 kHz; DAT = 48 kHz)
- All sets have the high performance DLR technique (Direct Line Recording)
- Music scan or Intro scan 10 sec. (program, disc)
- Improved stop modes (digital and analogue)
- Standby (RC) + hard on/off
- Easy jog (menu controller / level controller / next-previous)
- New user-friendly user interface:
  - music calendar (track bar)
  - FTD with fundamental status of the set visual
  - advanced programming (99 tracks / reviewing and editing programs)
  - easy start of recording
  - clear messages show customer what to do next
- Improved finishing (face value)
- Remote control functionality
- HD-CD recording (No playback)

AUDIO BUFFER

With the new DASP processing IC we are able to introduce an advanced audio buffer with a capacity of several seconds (0-3 sec.).
Although this is not a major competitive edge compared with the competition (audio buffer is quite common), it gives a major improvement over our 1998 range CD Recorders.

What does it mean for your recording?

- No loss of music while starting a recording with synchronised start (CD Sync). At present* a maximum of 400 msec. can be lost.
- Synchronised start per track. At present* this is not included because the first track only of an original CD usually starts after a couple of seconds. The other tracks often start immediately. Losing 400 ms per track is unacceptable.
- No loss of music when recording from a program. A program jumps immediately to a track, and the missing 400 ms can be noticed by a critical consumer.
- Perfect positioning when jumping to next / previous track. Track increment will be positioned in exactly the same position as the original. At present* the track increment is delayed by 3 frames (13 ms). Jumping can only be done to a position that is shifted by 39 ms into the new track.
- Synchronised start analogue.
- Better stop behaviour analogue.
- Recording can be stopped within 3 seconds without ‘damaging’ the CD. At present* a track of 4 seconds will always be recorded.
- When entering an SCMS track, no recording will be made of the first few seconds. At present* a track of 4 seconds will be recorded.

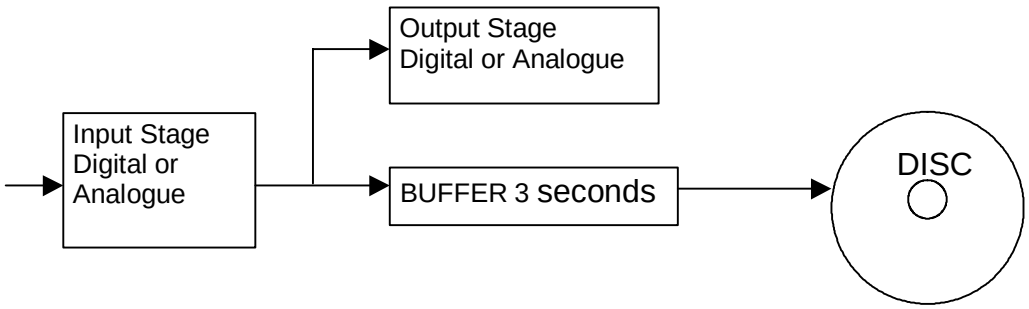
* ‘At present’ refers to the 1997/1998 product range.

Why do you need it?

First of all: to make perfect recordings without any loss of music at the start of a track. Secondly: all information available on the original disc will be duplicated at the exact same spot of the disc you are recording to. By using this state-of-the-art technology, we have finally perfected the ‘bit-for-bit’ copying technique.

How does it work?

The audio (and track information) will pass through an audio buffer that continuously holds several seconds (0 to 3 seconds) in memory. In this way the recorder has enough time to determine the status of the input signal (music versus no music, track increment, lead-out etc.), and will start the recording at the right moment. The music is taken from the buffer.



Improved STOP modes

The current range (without audio buffer) has difficulties in detecting if the source has stopped. With the audio buffer this is no longer a problem, and provided the opportunity to improve the stop behaviour.

What is the benefit?

Perfect stopping of recordings (even when an analogue source is used as input).

Why do you need it? To avoid:

- 20 seconds silence between recordings (current range)
- The recorder stopping when recording music with very silent parts (e.g. playing a violin)
- The possibility to stop a recording which has just started (within 3 seconds), without having anything recorded on the disc
- To be able to record properly from CD changers

How does it work?

See audio buffer.

Analogue CD Sync.

What is the benefit?

Synchronised start of a recording with an analogue source or a professional source without subcode information as input.

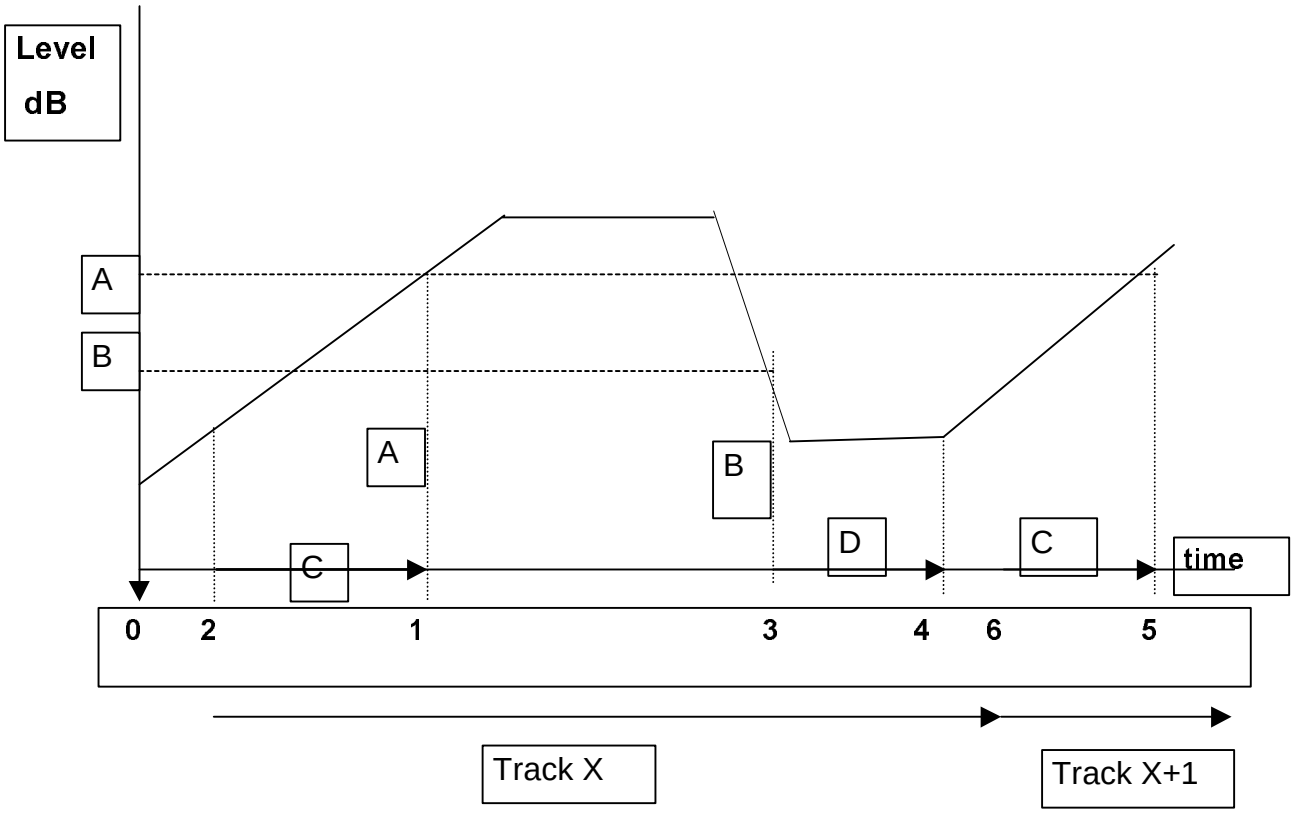
Why do you need it?

Synchronised start of a recording ensures that the recorder will only start when music is detected.

How does it work?

Digital information also contains the track start information. This information is used to start a digital recording.

This kind of information is not available for analogue input signals. In this case, the input level is continuously measured with the help of the audio buffer. When the source has started, the recorder senses a significant change in the input level and starts recording (input level above -50dB). As the first seconds are still in memory (audio buffer), the recorder will calculate a certain time back in time and put this audio data on the disc. We called a virtual start point.



Explanation :

0 Auto start active

1 Track transition is detected when audio goes above value A

2 The actual recording of the audio track will start at point 2. A jump backwards is performed in the audio buffer" Time C" . Virtual start point

3 & 4 when audio goes below level B for a time D, a track increment is detected

5. When audio rises again above value A

6. The recording of the new audio track will start at point 6

Sample Rate Converter (SRC)

What is the benefit?

Recordings can be made from all kinds of digital sources (with sampling frequencies from 12 kHz - 56 kHz).

Why do you need it?

- When you want to record from a source with a sampling frequency that is not equal to the 44.1 kHz as used in CD and MD. The sampling rates of the various digital sources are:
  - CD 44.1 kHz
  - MD (digital recordings) 44.1 kHz
  - MD (analogue recordings) 44.1 kHz
  - DAB (Digital audio broadcasting) 32 /48 kHz
  - DAT 32 / 44.1 /48 kHz
  - DCC 44.1 / 48 kHz
- When you want to record from pitch-controlled sources (variable Sample Rate Converter)

How does it work?

The input signal is sampled again with a frequency of 70 MHz and reconstructed to give a signal with frequency of 44.1 kHz.

Direct Line Recording (DLR)

For the perfectionists among audio enthusiasts, Philips has added a technique to make true 'bit-for-bit' recordings from sources with a Sample Rate Frequency of 44.1 kHz +/- 100 ppm (CD and MD).
For more detailed information, see the below.

Direct Line recording (DLR)

There are two purposes for direct line recording.

The first one is to make a bit-to-bit copy without changing the bits of the original digital source. How does this work in the CDR880?

Connected to a digital source of a sample rate from 44.1kHz +/- 100ppm, the machine will automatically tune his crystal in the same deviation. The speed of the recorder will follow the speed of the connected source. Now we are making a direct line recording Bit to Bit copy. This however has it's limits. The accuracy of the connected digital source must be within the range of +/- 100 ppm (piece per million). If the source exceeds the deviation of +/- 100 ppm, the recorder will automatically switch over to Sample Rate Conversion. During a recording it will never change back to Direct Line Recording to avoid undesirable clicks in the audio signal.

The second reason is to eliminate the jitter of the incoming digital source (dejittering) . Imagine the source is within the standard (44.1 kHz +/-100 ppm) but the deviation is changing into a very high frequency. This will cause extra jitter in the write pattern of our recorder. Also the quality of the audio will be affected by this jitter. To prevent the extra jitter, a dejitter system has been implemented in our key component TDA1373N2. This converts all jitter coming from the connected digital source into a maximum of 50 Hz. This gives the benefit that the 'writing jitter' is very stable.

What if you listen to a copy of an original and it occurs that you hear a difference?

This depends to the quality of your CD player and the quality of your original disc. The CD recorders from Philips meet the needs of the standard known as SPDIF (Sony Philips Digital Input Format) Every player should meet the requirements in the digital standard norm IEC958 I/II (SPDIF) to safeguard a good digital copying behaviour.

In today's situation, the CDR880 is the only CD Recorder from Philips which is equipped with the high-performance DLR technique. In the 1999 range, we will introduce DLR for all new models.

What is the benefit?

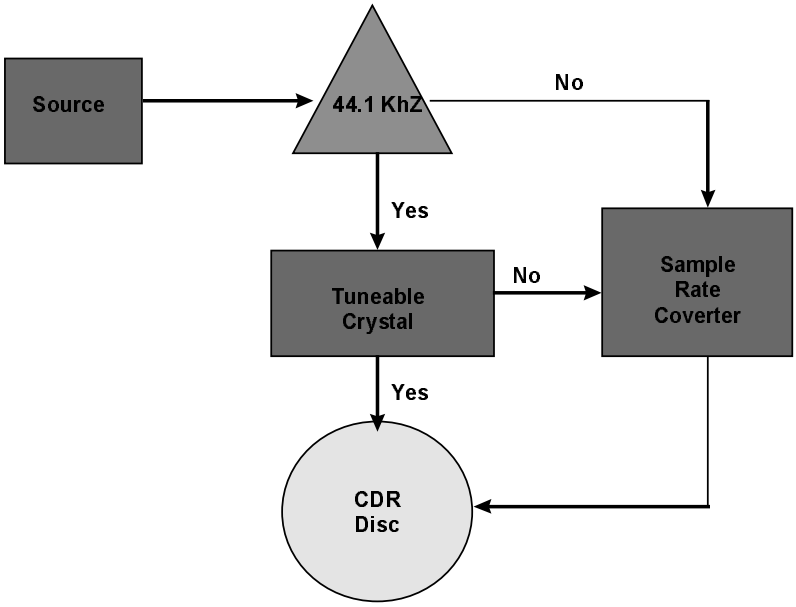
- A perfect copy of the source material (44.1 kHz), meaning a true ‘bit-for-bit’ recording.
- HD-CD Recording

Why do you need it?

To avoid digital information being transformed by the Sample Rate Converter. Elimination of jitter from the incoming digital source (‘dejittering’). The result is a clear reproduction of the original material.

How does it work?

When a signal of 44.1 kHz is detected, the Sample Rate Converter is by-passed and the digital bitstream is recorded directly to the destination disc. To be able to make a ‘bit-for-bit’ copy, it is essential that the source disc has the same speed as the destination disc.
We therefore measure the input frequency (speed of the source disc). A tuneable crystal accurately controls the speed of the destination disc and keeps the speed within the limits of max. +/-100 ppm (parts per million). If the speed deviates too much, the Sample Rate Converter is activated.
To avoid audio disturbance, the recorder will never switch back to DLR during a recording.



HDCD – recording

With a bit-for-bit DLR technology, HDCD-encoded CDs are recorded in HDCD (High-Density Compact Disc) format. This means that if you copy an HDCD disc using the digital output of your CD player, the entire encoding technology is reproduced. This proves that DLR technology really does make a bit-for-bit copy of a CD without interrupting the audio data.
CD players with a built –in HDCD filter can playback the higher sound quality of these discs.
The new range of CD recorders do not have the HDCD filter and encoder built-in. This means that the CD recorder cannot playback the HDCD quality.

What are the benefits?

HDCD gives you a 20-bit dynamic range and a more natural instrumental sound.
HDCD uses the same standard as a normal CD. You can play HDCD discs on any CD player, anywhere in the world

Why do you need it?

If you have a CD player with an HDCD filter and DAC, then you playback the recording without HDCD sound quality. (The recorder has no HDCD filter).

How does HDCD work?

HDCD converts analogue signals (ADC) first to 192/176.4 kHz –24bit. Then, decimation takes place from 196/176.4 kHz through 96/88.2 kHz to 44.1 kHz – 24bit. After that, HDCD extended dynamic range encoding is performed, which delivers a 44.1 kHz - 16bit signal (CD standard).
To allow detection of HDCD afterwards dithering is done which implements the HDCD detection code.

What is the difference between CDR760 / CDR 560 / CDR765 and DLR in CDR880?

The CDR760 / 765 / 570 / 538 have no Sample Rate Converter to by-pass. So these sets can only make digital recordings from sources with the 44.1 kHz sampling frequency (CD and MD).
As (bad) sources could deviate by more than 150 ppm (the standard), we have built-in a Voltage Controlled Oscillator (VCO) to keep the speed of the destination disc within the limits of +/-100 ppm (+/-1%). This enables recording from even very low-end CD players, but also increases the amount of jitter.
The 1999 range has been designed with the optimal architecture: DLR (44.1 kHz +/-100 ppm) and SRC for signals that deviate too much for DLR.
(For a detailed description, see also DLR.)

Initialising (OPC) & Running OPC

Running OPC is a feature that ensures an optimal recording quality. It is unique to Philips recording devices.

What is the benefit?

- Maximum compatibility with other CD players and optimal recording quality
- High-quality writing on the blank CD-R(W)

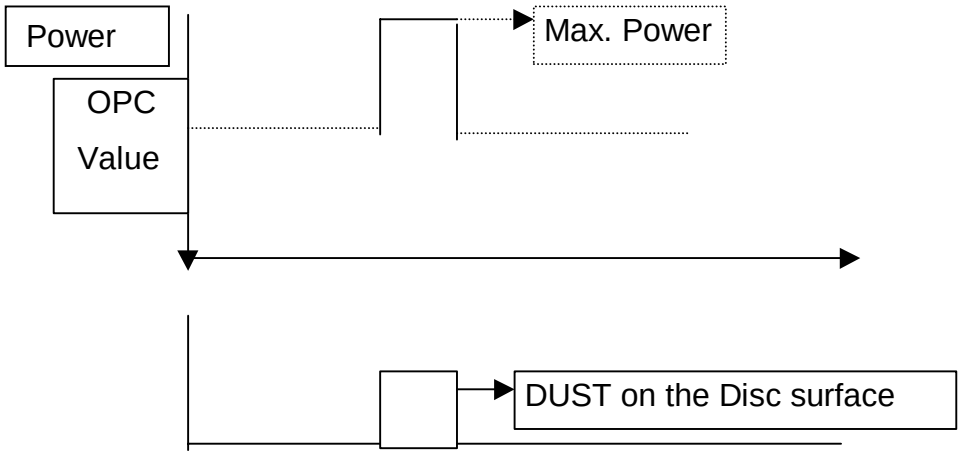
Why do you need it?

CDs are often recorded for use in other CD players (e.g. car, portable CD, sound machine etc.). This technique ensures maximum compatibility.

How does it work?

Running OPC means that the optimal power for the laser is adjusted continuously.
To ensure that the laser energy is constantly optimised during a recording, an initial OPC (Optimum Power Calibration) is performed each time a disc is

loaded, together with constant running OPCs which compensate for dust, scratches and any other possible variations across the disc surface.



SCMS (Serial Copy Management System)

What are the benefits?

SCMS is the function that prevents unauthorised copying by adding copy inhibit information to the digital signals.

Why do you need it?

Unauthorised copying is restricted by law. All digital recording equipment for consumer use must be equipped with SCMS.

How does it work?

Originals that are subject to copyright protection (Copy Protected audio) are marked by a copy bit which is present in the digital signal (EBU). This copy bit is taken over and placed on the *Home copy* every second.

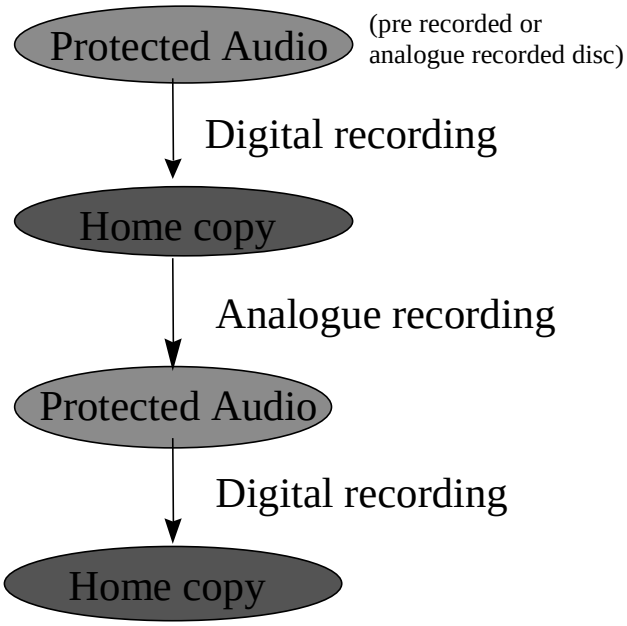
SCMS distinguishes between three possible copying situations:

Original status:	Copy bit status:
1. Copy Free originals	'low'
2. Copy Protected audio (commercial CDs)	'high'
3. Home copies	'toggled every 65 ms
between 'low'	and 'high'

The (SCMS) only allows a new digital recording to be made under specific conditions:

- A digital copy of Copy Protected audio becomes a *Home Copy* of Original audio.
- A digital copy of a *Home Copy* of Original audio is not possible. Only an analogue copy can be made!
- A digital copy of Not Copy Protected audio remains Not Copy Protected audio.
- An analogue copy of any kind of audio becomes Copy Protected audio.

To find out if a CD is Copy Protected, all you need to do is just start the recording as usual. If the CD is Copy Protected, the message ‘ COPY PROTECT’ will be displayed.
In this case the recording can be made via the analogue connections (to be selected using the SOURCE key) The CDR775 dual-deck recorder (copying from internal CD deck → CDR deck) will automatically switch over to analogue if a Copy Protected original is detected.



RID (Recorder Unique Identifier)

What are the benefits?

Home Copies are marked with a unique code.

The RID is a method to prevent unauthorised copying by enabling identification of the recorder on which a recording has been made.

Why do you need it?

In line with SCMS, the RID is required on consumer digital recording equipment to allow identification of *Home Copies* that may be made as the result of illegal activities.

How does it work?

The RID is a 97-bit code which is recorded every 100 frames (1.3 sec.) on all discs made with the CD Recorder. It comprises a brand name identifier, a type number and the drive number (e.g.: PH775xxxxxx) which, together, uniquely identify the recorder on which any specific disc was recorded.

Disabling of tray (dealer function)

What are the benefits?

Extra safety feature for dealers who want to demonstrate the CD Recorder permanently.

Why do you need it?

To prevent theft of discs used in demo players on the shop floor.

How does it work?

By pressing a key combination (OPEN/CLOSE & STOP) during powering-up the CD Recorder, the tray will be disabled (or enabled). This setting is stored in the memory.

CD Text editing (record*, input, playback)

The new CD Text feature offers users the option of identifying the disc while playing. However, creative users will be able to find several other applications for this feature (e.g. you can give personal names to songs, or if you have recorded your own voice the 'artist name' can also show the performer's name).

*CDR775 only!

What are the benefits ?

1. PLAYBACK: Title and artist names of the disc and tracks appear on the display.
2. INPUT: The disc/track titles and artist names can be added in the stop mode or during recording, independently of the tracks being recorded.
3. RECORDING: CD Text is copied from the original, if not protected (CDR775 only).
4. EDITING: Text can always be edited for a CD-RW disc, and this can also be done for CD-R as long as the disc is NOT finalised.

Why do you need it?

1. To see title and artist information in the display during playing.
   Tip: dealers can show this text feature permanently on the display.
2. To personalise your own recordings by giving them a name, e.g. DISC TITLE: 'MY FAVOURITE LOVE SONGS'.
   Tip: dealers can make special discs with commercial texts like 'I CAN RECORD' or 'MAKE YOUR OWN CD', combined with music or slogans to scroll over the display during demo in the shop.
3. To avoid the need for manual text input.
4. To be able to change an existing text.

How does it work?

Text input is easy, by using the menu plus the easy jog control or by using the remote control.

The user can select the album title, artist title, track titles or track artists to make a text of max. 60 characters. The text will be stored in the memory of the CD Recorder until the disc is finalised. During finalising of the disc, the text is written to the Table Of Contents (TOC).
As long as the disc is not finalised, the user is still able to change the text (for both CD-R and CD-RW discs!).
For CD-RW discs, the text can always be changed.

CD TEXT INPUT

Text input is very flexible and convenient:
The text menu is active in both STOP mode and RECORDING mode.

1. STOP mode: When a CD-R(W) disc with recorded audio tracks is in the recorder, text for the recorded tracks can be added.
2. RECORDING mode: Text for 99 tracks can be added completely independently of the track being recorded at that time. This also applies even if the actual recording has not (yet) been made. When the recording has stopped, the text for the recorded audio tracks will be stored. (If auto finalise was active and the text input menu is still open, the auto finalise function is disabled.)

TEXT MEMORY / HANDLING

As the CD Text is part of the Table Of Contents, all text will stay in the CD Recorder's memory until that disc is finalised. (The text can therefore still be edited as long as the disc is not finalised.)
The memory can contain text for approximately 50 discs, each with 20 tracks. (If only a disc title and artist name is used, text for more than 100 discs can be stored.)
To prevent users from structurally not finalising discs, the recorder will show a flashing message 'UNFINALISED' every time the tray opens, together with the percentage of the memory which is used (TEXT MEMORY xx%).

CD TEXT MEMORY FULL

Although the memory capacity is more than sufficient, a MEMORY FULL message may sometimes be displayed. The user then has two options: either

finalise a couple of discs, or delete the text for some discs. The stored text for every unfinalised disc can be reviewed or deleted by using the menu (MEMORY VIEW function).

CDL4009 loader

The new generation of Philips CD Recorders use the latest recording technologies. These ensure perfect recording quality.

What are the benefits?

-Better and quicker jumps to a new track. Specially needed when you make a program on your player.
-Possibility to record and play CD-Text

Why do you need it?

This new loader enables the CD Text function, and at the same time it solves all the shortcomings of the current range.

How does it work?

The new feature in our loader is PCS (Position Control System)
With this new servo control system we can jump much quicker than the previous one.
Fully compatible with the RED Book standard .
CD-text implementation for read and write options over the entire disc.

Audio Codec UDA 1341TS/N1 used in all sets except CDR950:

This analogue-to-digital and digital-to-analogue converter has signal processing features based on bitstream conversion technology.
The fully integrated analogue front end (including PGA and digital AGC) and DSP featuring makes the device an excellent choice. The Codec has special sound processing features in playback mode like de-emphasis, volume and soft mutes.

Stereo, 96 kHz, Multibit sigma-delta Digital Analogue Converter (CDR950 only)

The flagship CDR950 is equipped with the AD1855 (Analogue Devices), a high-performance, single-chip stereo, audio DAC delivering 113 dB Dynamic Range and SNR (A-weighted, not muted) at 48 kHz sampling rate. It comprises a multibit sigma-delta modulator with dither, continuous time analogue filters and analogue output driver circuitry. It is backwards-compatible by supporting 50s/15s digital de-emphasis intended for 'red-book' 44.1 kHz sampling frequency playback from compact discs.
The AD1855 accepts 16bit –bit serial audio data in MSB first, two-complement format.

Summery of AD1855 features:

- Multibit Sigma-Delta Modulator with "perfect differential linearity restoration" for reduced idle tones and noise floor.
- Data direct scrambling DAC-least sensitive to jitter
- Differential output for optimum performance 113 dB S/N and dynamic range at 48 kHz sampling rate.
- -97 dB THD+N
- On-chip volume control with 1024 steps.
- 5V Stereo Audio DAC System
- Hardware and software controllable clickless mute
- Digital de-emphasis processing

16-Bit sigma-delta Analogue Digital Converter (CDR950 only)

The CDR950 uses the AD1877 (Analogue Devices), a stereo, 16-bit oversampling ADC based on sigma delta technology intended primarily for digital audio bandwidth applications .Each single-ended channel consists of a fourth-order one-bit noise-shaping modulator and a digital decimation filter. An on-chip voltage reference, stable over temperature and time, defines the full scale range for both channels. Digital output data from both channels are time-multiplexed to a single, flexible serial interface.

Summary of the AD1877 featuring:

- 92 dB (typ) dynamic range
- 5V power supply
- Single-ended dual-channel analogue inputs
- 90 dB (typ) S/(THD+N)
- 0.006 dB decimator passband ripple
- 4^{th} order, 64-times oversampling sigma-delta modulator
- 3-stage, linear phase decimator
- On-chip voltage reference.

Fade-in / Fade-out (CDR950 only)

What is the benefit?

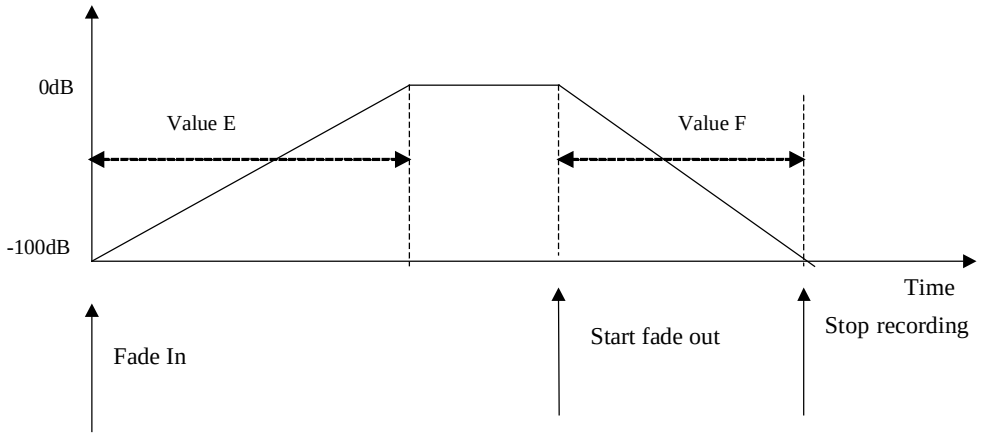
Smooth start and stop of the audio signal when recording parts of music. This is a more sophisticated recording feature.

Why do you need it?

When you want to make a recording where the start of end of the music is not well defined (e.g. one song from a live concert, or a recording from the radio). The alternative is to use the level potmeter or a special digital signal processing unit.

How does it work?

When a recording starts, the signal is automatically ramped-up to the adjusted recording level. When Stop is pressed, the signal gradually fades down to silence. This feature, as well as the start and/or stop time, can be set via the menu. A label in the display shows that the ‘Fade function’ is enabled or disabled.



Microphone input (Stereo/mix) (CDR 950 only)

What is the benefit?

Recording from a microphone

Microphone preamplifier (input via CD Recorder to amplifier)

Why do you need it?

To record your voice or to mix the microphone input with one of the inputs.

To be able to connect a microphone to an amplifier (which does not normally have a mic. input).

How does it work?

1. Separate stereo microphone recording:

The microphone input is selected using the SOURCE button. The JOG is active for adjusting the correct recording level. In this mode, the separate level potmeter for the microphone should be adjusted to the maximum (signal is recorded on both channels).

2. Mixing the stereo microphone with one of the inputs:

The required input (Digital 1-2, Analogue or Optical) is selected using the SOURCE button.

When a microphone is also connected (Microphone label lights up), it will be mixed with the input signal. In this case the JOG adjusts the levels of both the microphone and the selected input together, and the separate level potmeter

for the microphone can be used to adjust the balance between the microphone and the selected input (the microphone signal is mixed in both channels).

Monitor path (CDR 950 only)

What is the benefit?

1. Better monitoring of the actual recording (hearing what is really recorded).
2. The CD Recorder can be used as a preamp. for the microphone.
3. The high-quality signal processing (ADC / DAC / SRC) of the CD Recorder is used separately.

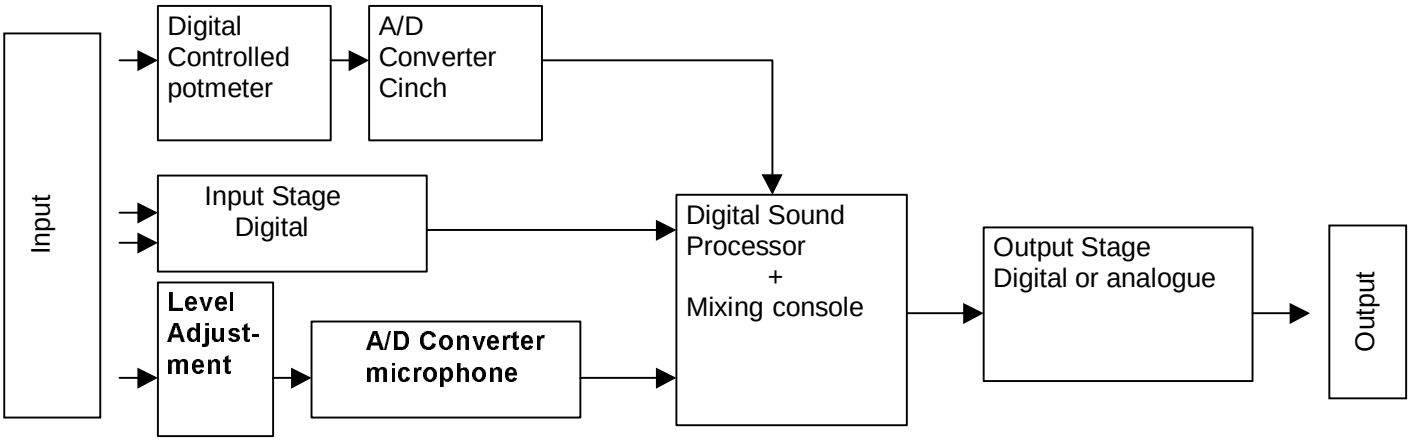
Why do you need it?

There can be many reasons. Some examples:

1. It enables the user to make better recordings by listening to the actual recorded audio.
2. When the user has no microphone input on the installed equipment.
3. When you want to transfer an analogue signal to a digital signal and adjust the overall level and channel levels

How does it work ?

1. In normal equipment, the audio on the input is directly coupled to the output. In the CDR950, the audio that passes through the recorder's digital processing stages (DAC/ADC/SRC) is placed on the output.
2. When NO disc is inserted, the recorder can still be put in recording-standby mode with the REC MODE button. In this case a connected microphone signal will pass through the processing stages of the CD Recorder, and will be present on the outputs (digital and analogue).
3. As well as a microphone, connected analogue sources will also pass through the ADC and will be converted into digital signals.



Text input for source (CDR950)

What are the benefits?

Ease of use.

Why do you need it?

As the CDR950 has 4 inputs, it will difficult to remember which audio source is connected to which input. Operation will be much easier if you can select between e.g. DAT, DCC, CD PLAYER or RECEIVER. These names will be shown in the display.

How does it work?

From the menu you can select NAME SOURCE. As for the text input menu, you can rename each input to the name you prefer. These names are stored in the memory of the recorder.

DJ mode (CDR775 only)

What are the benefits?

Simultaneous use of both CD drives is possible in playback mode only. (In principle, both drives act as if they were two separate CD players, each with two separate outputs, analogue and digital coaxial).

Why do you need it?

When using both drives together with a mixer, e.g. in a discotheque.

How does it work?

A special button (DJ MODE) is provided on the recorder. It only works when both drives are in playback mode. When this mode is activated, the recorder’s microprocessor needs all the available capacity, which makes it impossible to use the playback function simultaneously during recording.

ReWritable-Compatible Products 1999:

The table below shows all Philips products per region which are currently planned to be RW-compatible in 1999.

ReWritable-Compatible Products 1999:							
Philips		Regions					
Product-group	model-numbers	Europe	Eastern Europe	USA	AP	ME&A	Latam
Mini's							
	FW350c, 390c, 398c	x/x/-	x/x/-	x/-/x	-/-/x	-/x/x	-/x/-
	FW545c, 548c, 555c, 585c, 590c, 595c	x/-/x/-/-/-	x/x/-/-/x/-	x/-/x/x/-/-	-/-/-/-/-/x	-/-/-/-/-/x	-/x/-/-/-/-
	FW768p, 798w	x/x	x/-	x/x	x/-	x/-	x/-
	FW830c, 870c, 878c, 890p, 898w	x/x/-/x/-	x/-/x/x/x	x/-/-/x/-	-/-/x/-/x	-/-/x/-/-	-/x/-/x/x
	FW930r	x	-	-	-	-	-
	MZ7	x	x	x	-	-	-
Midi's	not compatible!	not comp.	not comp.	not comp.	not comp.	not comp.	not comp.
Micro's							
	MC165	x	x	x	x	x	x
	MC175	x	x	x	x	x	x
CD RCR							
	AZ1412	x	-	-	-	-	-
	AZ1518	x	x	x	x	x	-
CD Portable							
	AZ7680 /81 /82 /88	x/x/x/-	-/-/-/-	-/x/-/-	-/x/x/-	-/x/x/-	-/x/-/x
	AZ7781 /82 /83 /84	x/x/x/x	x/-/-/-	x/-/x/-	-/x/-/x	-/x/-/x	-/-/x/-
	AZ7880 /81 /82 /83 /84	-/x/x/-/x	-/-/x/-/-	x/x/-/x/x	-/-/-/-/x	-/-/-/-/x	-/-/-/-/-
	AZ7495	x	-	-	-	-	-
	AZ7585	-	-	-	x	x	-
	AZ7794	x	-	-	-	-	-
	AZ7895	x	-	-	x	x	-
CD Players							
	CD713	x	-	-	-	-	-
	CD723	x	x	-	x	-	-
	CD753	x	x	-	x	-	-
	CDC775	x	x	x	x	-	-

Car CD *							
	DC-6 series	x	x	x	x	x**	x
	DC-8 series	x	x	x	x	x**	x
*) All information on VDO Mannesmann is confidential and for internal use only!							
**) Only Middle East, excluding Africa							

Which products will have digital out in 1999

The table below shows all Philips products which are currently planned to have digital out for recording.

Mini's

FW396
FW545C
FW548C
FW555C
FW585C
FW590C
FW595C
FW768P (EXCEPT /37 USA VERSION!)
FW798W
FW830C
FW840
FW870C
FW 878C
FW 890P

Mini's (continued)

FW 898W
FW 910R
FW 930R
FW 938
MZ7

CD-players

CDC775
CD753
CD723

Receivers

FR960
FR970
MX975D

CD-R(W) Digital Audio Discs

Difference between CD-R/CD-RW digital audio discs and standard (prerecorded CDs)

The main physical difference between these two disc types and the standard prerecorded CD (audio or CD-ROM) is that the latter has no recording layer: the information is permanently stamped in the aluminium reflective layer. There is also a difference in terms of the data areas on the disc. Compared with standard CDs, the CD-R and CD-RW discs have an additional CD-R/CD-RW area located in front of the lead-in area. This additional area is used to store data specific to the recording process, and is divided into two parts:

- Program Memory Area (PMA), which contains the track numbers of the recorded titles and their respective start and stop points.
- Program Calibration Area (PCA), which is used by the CDR to calibrate the required laser energy by means of a trial recording (Optimum Power Calibration)

The CD-R disc versus the CD-RW disc

Both CD-R and CD-RW discs have the same basic structure but with significant detail differences. The CD-R disc has a dye-based recording layer, with a reflectivity of 40-70%, while the CD-RW disc has a phase-change recording layer with a lower reflectivity of 15-20%. Both discs have an additional reflective layer: golden for the CD-R, which accounts for the distinctive appearance, and silver (aluminium) for the CD-RW.

Recording on a CD-R Digital Audio Disc

Digital information is written to the disc by burning (forming) pits in the recording layer. The energy of the laser beam - in the range of 4 to 11 mW - causes limited heating of the substrate and recording layer to approximately 250°C. At this, temperature the recording layer melts, reducing its volume, while the substrate expands into the space that becomes available. By constant switching between writing and reading power, a pit pattern corresponding to that of a conventional CD is produced.

Recording on a CD-RW Digital Audio Disc

In the CD-RW disc, the recording layer is made of an alloy of silver, indium, antimony and tellurium. In its original state, this layer has a polycrystalline structure. During the recording process, the laser selectively heats tiny areas of the recording track to a temperature above the layer's melting point (500 - 700°C) . For CD-RW writing, the laser power used is in the range of 8 to 14 mW.

The pulsed energy delivered by the laser beam melts the crystals in the heated areas into a non-crystalline amorphous phase ('pits'), which has a much lower reflectance than the remaining crystalline areas ('lands'). This difference in reflectance allows the recorded data to be read-out, producing a signal similar to that obtained from a standard CD. The physical characteristics of the amorphous phase are 'frozen-in' during cooling, making the recording just as permanent as any standard prerecorded CD.

Erasing and Overwriting a CD-RW Digital Audio Disc

Erasing of a CD-RW disc is performed by returning the material in the recording layer, which was changed to the amorphous state during recording, back to the crystalline state. This is done by heating the layer to a temperature of about 200°C (less than the melting point) and maintaining that temperature for an extended period (in practice 37 minutes for a complete disc). The disc is then returned to its original - completely unrecorded - state.

A direct overwrite strategy is possible by combining the write and erase techniques. In this case, new pits are written in the recording layer using the same pulsed laser beam energy as in the standard writing strategy.

The new HR 100 CD-R Digital Audio Disc from Philips



In line with the fast-increasing market acceptance of our full range of Audio CD Recorders, Philips has now introduced an enhanced CD-Recordable Digital Audio disc, the **HR100,** which offers increased reliability and outdoor playback performance.

HR 100 stands for **H**igh **R**eliability for **more than 100 days under outdoor direct sunlight,** making the HR100 disc the ideal choice for portable and outdoor playback applications.

Service approach

The 3rd generation CD recorders contain an adjusted CDRloader Module. For this module a central repair is foreseen. This module contains the loader + CDM and the mainboard. Electronic adjustments on mainboard have to be carried out with special equipment. So to all repairs which concern the CDM and/or de Servo part this adjustment has to be carried out. Mainboard can not be interchanged with another CDM or loader!!! This means mainboard swaps are not possible any longer.

For each modelnumber a new module has been defined:

CDR570/CDR930:	3104 129 52510	CDR570 MODULE SERVICE
CDR770:	3104 129 52520	CDR770 MODULE SERVICE
CDR775:	3104 129 52530	CDR775 MODULE SERVICE
CDR950:	3104 129 52540	CDR950 MODULE SERVICE

The rest of the set can be repaired on component level. Dedicated Service manuals are available or still in preparation.

For Service manual CDR570/ CDR930 ordernumber reads
3104 125 40010.
For Service manual CDR770 ordernumber reads
3104 125 40020.
Service manuals for CDR775 and CDR950 are in preparation now.

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IRIS

LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

03.01 TYPENUMBER(S): **FW350C, FW390C, FW398C, FW540C, FW545C, FW548C, FW555C, FW585C, FW590C, FW595C, FW748P, FW768P, FW798W, FW830C, FW840C, FW870C, FW878C, FW890P, FW898W**

INFORMATION : Correction to the Service Manual, Partslist
The following flex-foils and flex-foil-connector were missing and have been added to the partlist of the 3CDC-99 Module (chapter 10).

pos.	code number	article description
1805	2422 025 09768	Flex-Foil-Connector 19P
8001	4822 320 12232	Flex-Foil 15P 480mm
8001	4822 320 12658	Flex-Foil 19P 480mm
8001	4822 320 12659	Flex-Foil 23P 480mm
8001	4822 320 12729	Flex-Foil 23P 400mm
8005	3103 308 91820	Flex-Foil 15P 95mm

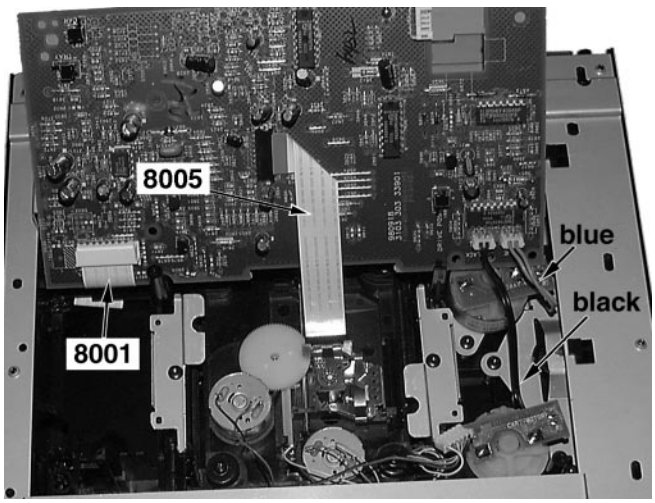
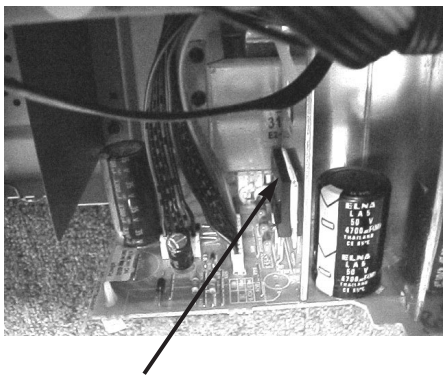


fig.1 – location of flex-foils

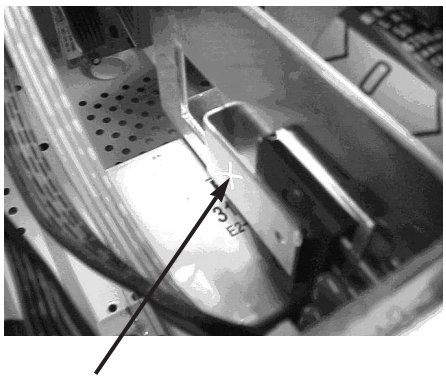
REMARKS :

03.02 TYPENUMBER(S): **FW540C, FW545C, FW548C, FW768P**

INFORMATION : During production weeks 9921 to 9925, some sets have been produced without the Clip-Rectifier, that enhances the heat transfer between Rectifier and Heatsink. Below pictures show the Power Supply board with and without the Clip-Rectifier.



clip-rectifier missing



clip-rectifier in position

REMARKS : All sets from production weeks 9921 to 9925 that come in for repair must be checked – Missing clips have to be added as preventive action. The service code reads 4822 492 11068.

03.03 TYPENUMBER(S): **FW570C/37**

SYMPTOM : **IRIS CODE 1 1 1 C**
Fuse 1350 T315mA is blown.

CURE : The fuse blows because its application is near the marginal limit in worst case condition (most of the LEDs are on).
The problem is resolved by changing:
1) Fuse 1350 to T400mA type (2422 086 10612)
2) Resistor 3480 to higher wattage PR02 type (2322 194 73109)

REMARKS : Production has already been stopped.
Above solution is applicable for repair only.

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LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

02.01 TYPENUMBER(S): **ACT7580, ACT7581, ACT7582**

INFORMATION : In order to improve the CD start-up behaviour, following parts have been changed:
- Capacitor 2815 deleted
- Capacitor 2823, 47pF (4822 122 33761) added
- Resistor 3830 changed to 1kΩ (4822 051 30102)

REMARKS : Modification is implemented from production start onwards.

02.02 TYPENUMBER(S): **AJ3080**

SYMPTOM : IRIS CODE C 1 1 X
The fuse is blown out.

CURE : The fuse will blow if the CLOCK switch is set to ALARM and the SLUMBER button is pressed.
The problem can be soved by replacing jumper 9022 by a 1kΩ resistor (4822 050 11002).

REMARKS : Modification has been implemented in production from week 9910 onwards.

02.03 TYPENUMBER(S): **AJ3935**

INFORMATION : In course of production, following parts are changed to improve distortion at maximum volume.
- Resistors 3201 and 3204 changed to 820Ω (4822 117 11454)
- Resistors 3221 and 3222 changed to 3.3kΩ (4822 051 20332)

REMARKS : Modification is implemented from production start onwards.

02.04 TYPENUMBER(S): **AJ3940**

SYMPTOM : **IRIS CODE 1 1 4 4**
The transformer hum is audible.

CURE : Hum is caused by the vibration of shielding plate which is mounted on top of mains transformer. The shield plate is a construction of 3 metal layers which are sticked together by means of double-sided adhesive tape. If the layers are not pressed together properly, the shield plate will vibrate.
To solve the problem, we suggest to dismantle the shield plate and hammer it against a solid surface.

REMARKS : From production week 9905 onwards, a press jig has been used to ensure shield plates are well pressed.

02.05 TYPENUMBER(S): **AZ1009, AZ1010**

INFORMATION : CD-drive CD94V5T1 has been replaced by the new type DA11 4822 691 10747.
To adapt the electronic circuitry to the new CD-drive following components have been changed on the Combi Board:
3828 changed from 18kΩ to 68kΩ (4822 116 52297)
3851 changed from 10kΩ to 15kΩ (4822 116 52244)
3853 changed from 15kΩ to 18kΩ (4822 116 52251)
3855 changed from 33kΩ to 27kΩ (4822 116 52264)

REMARKS : Modification has been implemented in production from week 9912 onwards. Sets with the new CD-drive are marked with factory change code KT03.
This info will be followed by Service Information A99-350 (4822 725 26032).

02.06 TYPENUMBER(S): **AZ1120**

INFORMATION : In order to improve the ESD behaviour, coil 5100 has been changed to 2.2mH (3198 018 12280).

REMARKS : Modification is implemented from production start onwards.

02.07 TYPENUMBER(S): **AZ1202**

INFORMATION : In course of production, following parts have been changed to re-adjust the amplification reserve of CD signal.
- Resistors 3302 and 3303 changed to 270Ω (3198 011 02710)
- Resistors 3595 and 3596 changed to 22kΩ (3198 011 02230)
- Resistors 3597 and 3598 changed to 15kΩ (3198 011 01530)

REMARKS : Modification has been implemented in production from week 9915 onwards.

02.08 TYPENUMBER(S): **AZ1202, AZ1207, AZ1209**

INFORMATION : The Cassette Door Spring (pos. 407) looses out easily.
To solve the problem, the shape of the spring has been changed.
The code number of the new spring is 3140 111 00620.

REMARKS : Modification has been implemented in production from week 9915 onwards.

02.09 TYPENUMBER(S): **AZ2000**

INFORMATION : In course of production, following parts on the Combi Board have been changed to improve sound quality:
- Capacitors 2518 and 2519 changed to 10nF (4822 121 51387)
- Jumpers 9555 & 9556 replaced by resistors 3590 and 3591, 2.2kΩ (4822 116 52256)
- Resistors 3559 and 3560, 10kΩ (4822 050 21003) added across pins 1 to 6 and 3 to 5 of volume control 3522
- Resistors 3595 and 3596 changed to 56kΩ (4822 116 52291)

REMARKS : Modification has been implemented in production from week 9910 onwards.

02.10 TYPENUMBER(S): **AZ2000**

SYMPTOM : **IRIS CODE 4 5 1 1**
CD does not operated because IC 7801 (M65821) is defective.

CURE : IC7801 is damaged by overheating because its location is too close to the heatsink of the Power IC.
The problem can be solved by reducing the supply voltage of the CD module:
- Replace jumper 9526 by a resistor 3315, 4.7Ω (4822 050 4708) on Combi Board

REMARKS : Modification has been implemented in production from week 9913 onwards.

02.11 TYPENUMBER(S): **AZ2000**

INFORMATION : In order to improve reliability, transistor 7260 has been changed from BC327-40 to BC369 (5322 130 44593).
Due to different transistor-pinning, the layout of the printed board had to be modified.
Layout stage “3140 113 3139.2” uses BC327-40
Layout stage “3140 113 3139.3” uses BC369

REMARKS : Modification has been implemented in production from week 9921 onwards.

02.12 TYPENUMBER(S): **AZ2402**

SYMPTOM : **IRIS CODE 6 1 1 X**
The Power ON/OFF switch 1496 is burst.

CURE : The transient current through the switch is too high.
To reduce the transient current we suggest the following changes:
- Replace 3594 by a 10Ω fusible resistor (4822 052 11109)
- Change 2567 to 100µF/25V (4822 124 40207)

REMARKS : Modification has been implemented in production from week 9913 onwards.

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LINE OF BUSINESS AUDIO SYSTEMS

SERVICE NEWSLETTER

02.01 TYPENUMBER(S): **GENERAL**

SYMPTOM : **IRIS CODE 3 1 3 X**
The clock runs too fast/slow, approximate 1-2 minutes per month.

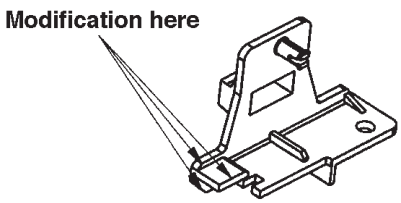
CURE : In addition to Newsletter issue AS98.09.02, the clock accuracy can also be corrected by replacing the 32.768kHz crystal by an improved one. The service codenumber for the improved crystal reads 2422 543 01069.

REMARKS :

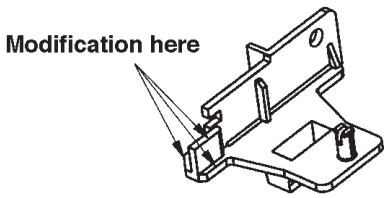
02.02 TYPENUMBERS : **FW72C, FW346C, FW356C, FW358C, FW359C, FW388V, FW530C, FW535C, FW538, FW550C, FW570C, FW575C, FW765P, FW775P, FW795W, FW850C, FW855C, FW860P, FW880P, FW880W**

SYMPTOM : **IRIS CODE 1 6 1 5**
The cassette doors (especially the left door) do not close properly.

CURE : In addition to Newsletter issue AS98.09.03, the improved brackets (left & right) can be recognized by the modification shown below:



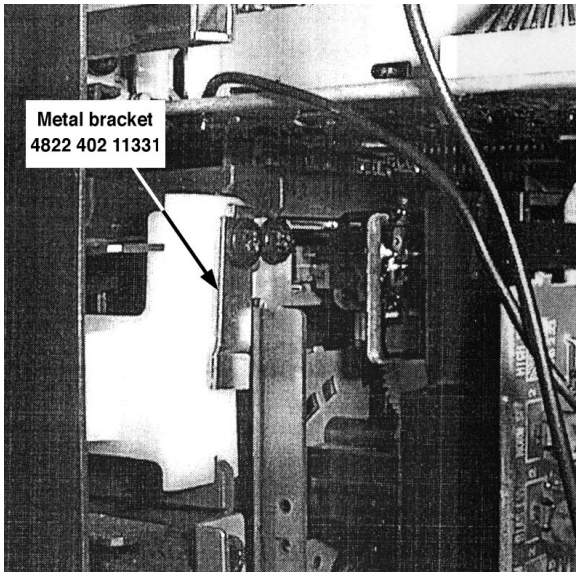
Bracket-left : 4822 402 11245



Bracket-right : 4822 402 11246

Sets with old brackets can be adapted by either

i) adding a metal bracket (4822 402 11331) to press onto the back of the bracket left or right as shown below, or



ii) replacing the old bracket by the modified one.

REMARKS :

02.03 TYPENUMBER(S): **FW388V**

SYMPTOM : **IRIS CODE 1 1 5 1**
Tuner preset stations cannot be selected via the numeric key-pad (0..9) of the remote control.

CURE : This feature is not available on the set.
It is an error in the IFU which is corrected with an addendum sheet from wk904 onwards.

REMARKS :

02.04 TYPENUMBER(S): **FW850C, FW855C, FW860P, FW880P, FW880W**

SYMPTOM : **IRIS CODE C 5 6 1**
Mic-mixing cannot be recorded when the selected source is TAPE 1.

CURE : Recording of mic-mixing with TAPE 1 source is not supported because the set will switch automatically into dubbing mode.
The IFU (section “Recording the mixed sound”) causes some confusion but will not be updated as production will end in April 1999.

REMARKS :

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Published by:
Service Department Portable Audio

LINE OF BUSINESS PORTABLE AUDIO

SERVICE NEWSLETTER

01.01 TYPENUMBER(S): **AQ6581**

SYMPTOM : IRIS CODE 2 5 3 2
Tape sound is distorted near strong electro-magnetic fields.

CURE : Problem can be solved by connecting two 390pF ceramic capacitors (4822 122 32121) from pins 6 and 23 to pin 10 (ground) of IC LAG668.

REMARKS :

01.02 TYPENUMBER(S): **AZ1015**

INFORMATION : Correction to the Electrical Partslist:
The service codenumbers of the Mains transformers have been mixed up. They should read:
4822 146 10877 for /00 and /14 versions
4822 146 11118 for /01 version
4822 146 10876 for /17 version

REMARKS :

01.03 TYPENUMBER(S): **AZ1025**

INFORMATION : In order to increase the tuner output power, following parts have been changed on the Audio Board:
- Resistors 3307 and 3308 changed to 150Ω (4822 116 83868)
- Resistors 3595 and 3596 changed to 27kΩ (4822 116 52264)
- Resistors 3597 and 3598 replaced by jumpers

REMARKS : Modification has been implemented from production start onwards.

01.04 TYPENUMBER(S): **AZ1200, AZ1202, AZ1203, AZ1205, AZ1207, AZ1208, AZ1209**

SYMPTOM : **IRIS CODE C 1 3 X**
No display in CD mode at low battery voltage.

CURE : Problem can be solved by changing resistor 3251 from 470Ω to 390Ω (4822 116 83881).

REMARKS : Modification has been implemented in production from week 9850 onwards.

01.05 TYPENUMBER(S): **AZ1202**

INFORMATION : Correction to the Mechanical Partslist:
The service codenumber of the Knob-Open (item 439) for Silver versions should read 4822 410 11392.

REMARKS :

01.06 TYPENUMBER(S): **AZ1205, AZ1207**

SYMPTOM : **IRIS CODE 2 5 2 5**
Volume setting is reset to level “11” when power is switched off.

CURE : Problem can be solved by changing capacitor 2401 from 100µF to 47µF (4822 124 81286).

REMARKS : Modification has been implemented in production from week 9901 onwards.

01.07 TYPENUMBER(S): **AZ8310, ND7600**

INFORMATION : In course of production the potentiometers VR1, VR4, VR5 and VR6 have been changed. The new potentiometers are available via following service codenumbers:
VR1 : 4822 101 11373
VR4 to VR6 : 4822 105 11133

REMARKS : The potentiometers can be distinguished by their pin layout:
Old potentiometers : 4 pins in 1 row
New potentiometers : 4 pins in 2 rows

01.08 TYPENUMBER(S): **MC135, MC136, MC155, MC156**

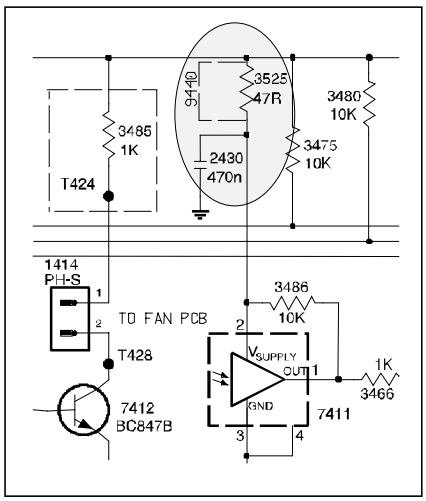
SYMPTOM : **IRIS CODE C 5 3 2**
Sound is muted or distorted at start-up when playing a CD containing only two tracks.

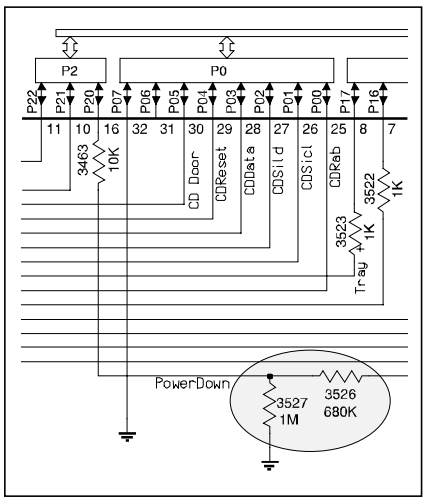
CURE : The problem can be solved by adding a resistor of 100kΩ (4822 116 52234) across C445 on the CD board.

REMARKS : Modification has been implemented in production from week 9901 onwards.

01.09 TYPENUMBER(S): **MC175**

INFORMATION : Correction to the Service Manual, Frontboard:
Following parts have been added/changed from production start onwards:
- Capacitor 2430 changed from 100pF to 470nF (4822 126 13482)
- Jumper 9440 replaced by resistor 3525, 47Ω (4822 116 52195)
- Resistor 3526, 680kΩ (4822 051 20684) added
- Resistor 3527, 1MΩ (4822 051 20105) added





REMARKS :

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IRIS

LINE OF BUSINESS AUDIO SYSTEMS

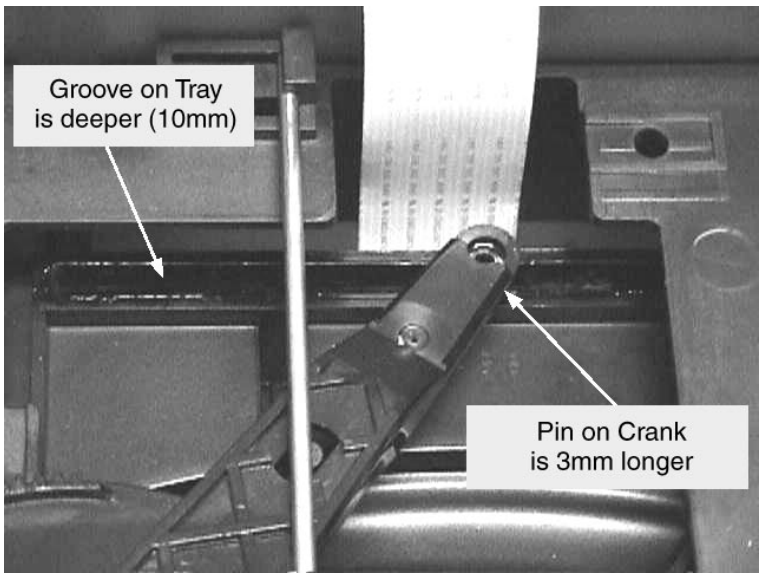
SERVICE NEWSLETTER

01.01 TYPENUMBER(S): **CDC751, CDC752**

INFORMATION : During transportation the pin on the Crank (pos 96) might jump out of the groove on the Tray (pos 108).

From production wk9835 onwards, the Tray and Crank have been modified. The groove on the tray is now deeper and likewise the pin on the Crank is 3mm longer.

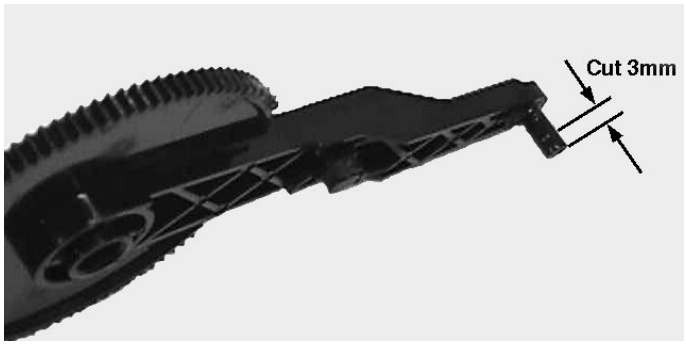
Due to this change the new Crank does not fit into the old Tray anymore. But it is still possible to use the old Crank on the new Tray.



The service code numbers for the Cranks are as follows:
4822 535 40105 Old Crank
4822 402 11241 New Crank

The new Tray can be recognized by its 10mm deep groove.

Because of limited stock of old Cranks, new Cranks have to be reworked for sets with an old Tray. This is done by cutting the pin by 3mm with a sharp NT-cutter (give it a clean cut & do not deform its circular cross-section) as shown below.



REMARKS :

01.02 TYPENUMBER(S): **CDC775**

INFORMATION : Corrections to the Service Manual
On page 1-2, CDC775/01 a 2-position voltage selector is shown instead of a 4-position type.
The 4 positions are: 110V/127V/220-230V/240V.

On page 8-4, capacitor 2863 and resistor 3885 are drawn as provision. Both components will be assembled from production start onwards to improve playability of “Thin Disc”.
2863 4822 126 13689 18pF 1% 63V
3885 4822 051 20153 15kΩ 5% 0,1W

REMARKS :

01.03 TYPENUMBER(S): **ALL CDR TYPENUMBERS**

INFORMATION : The user problems in this publication are separated into the following categories:
1. Playback behaviour
2. Recording behaviour
3. Operating behaviour

1. PLAYBACK

1.1. Display indicates: No disc
- ◆ Indeed no disc inserted
- ◆ Inserted disc is not recognised by Loader CDR mechanism (defective disc or damaged disc)
- ◆ Does the set work properly with another CDDA disc (pre-recorded Audio disc)?
- ❑ If Yes then disc is indeed defective
- ❑ If No then check the functioning of the set.
- ◆ Disc is not positioned correctly on tray at inserting and therefore not recognised by Loader CDR mechanism, reposition disc on tray.

1.2. CD-RW disc is not recognised
- ◆ Is it a CD-RW Digital Audio disc?
- ❑ If Yes and if the set is working properly on other recording discs, this particular disc should be “DC-Erased” (Power off, ERASE + RECORD simultaneously and switch Power on) This operation takes about 37 minutes and returns that CD-RW disc to its virginal status again.

2. RECORDING

2.1. Analogue input signal recorded is distorted at Playback.
- ◆ When recording analogue signals via tape or cassetterecording customer is used to overpower the input signal. This brings more dynamic in recorded signal.
- ◆ For digital recording there is enough dynamic space between 0 dB till about -95 dB, so overpowering is not necessary, the opposite is true; by digitalizing an overpowered signal ‘mutes’ are converted, resulting in the distorted stored signal

2.2. Digital connected, tracks are not incremented
- ◆ Is Auto track increment function switched on. If not switch on Automatic track increment
- ◆ Digital source is using another digital output than IEC958 format (consumer part). This is due to the transmitted subcode information which contains other data than the sub-code information in the CD-format. To have the advantage of digital recording, the Digital Audio Data is recorded without any problem. However the track-increment bit is not transferred.

2.3. Disc full after some or a few tracks.
Disc full message can be the result after a misrecording.

- Misrecordings due to customer actions are:
  - bumps against recorder: prevent bumps onto the set during recording process.
  - dust on disc: prevent dust particles on disc
  - scratches on disc: prevent scratches on disc
  - set is suddenly powered off: prevent switching off!!
- Misrecording due to improper working of CD Recording Module:
  - In case the error occurs always at the same time indication then Optical Pick-up Unit is not exactly following the Pregroove track on that position: replace CD-Recording Module (CDR765, CDR760, CDR560, CDR538; 4822 691 10737) or the CDRLoader module part CDR870, CDR880: 4822 218 12745)
- In case a CD-R disc is used, each misrecording will automatically activate the finalizing process of the recorder, because after a misrecording it is not possible to add further recordings onto that CD-R disc. To have all proper recordings stored, the TOC of the disc is filled.
- In case a CD-RW disc is used, the last recorded track will be overwritten when making further new recordings. Here the disc is not finalized automatically, but PMA (program memory area) is filled with the number of proper recorded tracks.

2.4. Analog input is so low that tracknumber is incremented and recording stops.

- If analog input signal starts very low (-35 dB) and automatic track increment is switched on then track nummer x will be followed by next number (x+1) after 4 seconds. If this low signal still continues the recording will be switched off after some seconds.
- By applying Manually track increment this signal can be recorded.
- Automatic switch off has been modified by adapting µP software program in CDR765, CDR760, CDR560, CDR538.

2.5. Loud noise on CD-RW disc

- CD-RW erasings are only done in PMA. The original signal will be overwritten later on. It might occur that the overwriting does not start at exactly the beginning of the frame of the track to be overwritten. In case overwritten signal consisted out of loud signal, then this short remaining signal can give this suddenly loud noise.
- For this phenomenon no better solution is possible.

3. OPERATING

3.1. Finalizing takes approx. 5 minutes

- Normally finalizing takes approx. 2 minutes.
- Due to the fact that finalizing is done at speed N=2.
- In case something goes wrong finalizing is automatically switched over to speed N=1 and procedure will restart. (4 minutes)
- Now in IFU is stated: “ Finalizing takes at least 2 minutes”

3.2. CD-sync activated and in first track 1 second deviation upon original disc.

- Via CD-sync, the recorder is brought in record standby position at the last recorded position on the program area.
- When CD-player is started the digital signal is brought to digital in. When this signal arrives immediately the linking procedure starts. After reading the last recorded 14 frames the recording of the digital input signal starts. As no buffer is used the first frames are not stored. (Max. about 400 msec. are lost)

3.3. How to erase one track between other tracks on CD-RW disc?

- It is not possible to erase tracks between other tracks. Only the last recorded track can be erased. In case of an erasure between tracks make first a copy of the to be safed tracks to another disc and then erase track after track to the desired position and add stored recording again.

3.4. Can a copy of another copy be made?

- For Philips Digital Audio CDR recorders SCMS protocol is valid
- This applies even to devices without a digital output
- SCMS allows any number of digital copies of original sound carriers, but prevents further digital copies of this created master.
- copies of this created master can only be made via D/A -> A/D conversion.
- According to audio interface standard IEC958, via channel status bit (timeslot30), the channel status word consists out of 384 bits per blok,each bit repeated twice so 192 channel status bits per blok are available. In channel status word every digital source is identified by an 8-bit “category code” Category code is formed by bit 8-15 of the channel status word.
- bit 15 of timeslot 30 or the last bit of the category code is called L-bit. This bit indicates an original source, commercially released pre-recorded software (L=“1”) or a personal recording or “home copy” (L=“0”) No indication.
- Control code gives the transmission mode and the copy protection status of the signal that is transmitted.
- the transmission mode is given by the bits 0 and 1 of the channel status word.
- Bit 2 contains the copy status (C-bit).
- C-bit = “0” for protected and “1” for unprotected material ”alt” for “home copy of copyright protected original”
- On recorded disc the copy bit defines the copy status:
- Q-control bit 1 (copy bit) copy protection status:
- Q-control bit 1 = “1” for protected,
- Q-control bit 1 = “0” for unprotected material
- Q-control bit 1 = alternating between “0” and “1” (alt) for “home copy of copyright protected original”

On recorded disc the copy bit defines the copy status summarised in one table:

Playback disc:	Flags coming from Q-control bit 1	Channel status at digital output			Maximum possible copies
		“C-bit” = bit 2	Category code	“L-bit” = bit 15	
CD, CD-R, CD-RW	1 0 alt	1 0 alt	10000000 10000000 10000000	0 0 0	Infinite 1 0

3.5. Can CD-i disc be copied to Audio CDRrecorder?

- Digitally connected only the CD DA tracks on that disc
- CD-i disc complete is not possible, only CD DA discs.
- Only via analogue connection the Audio signal can be copied

3.6. Can VCD disc be copied to Audio CDRrecorder?

- Digitally connected only the CD DA tracks on that disc
- VCD disc complete is not possible, only CD DA discs
- Only via analogue connection the Audio signal can be copied

3.7. Can CD-ROM disc be copied to Audio CDRrecorder?
- ◆ Digitally connected only the CD DA tracks on that disc.
- ◆ CD-ROM disc complete is not possible, only CD DA discs
- ◆ Only via analogue connection the Audio signal can be copied

3.8. Can more than one digital connection be made from one source?
- ◆ Only one digital connection per output can be made. Using more digital recorders which are digitally connected via Input and Output sockets behind each other is very limited because the IEC958 clockbit will deviate too much, resulting in a non proper recording.

3.9. Display indicates: No Audio
- ◆ Professional Recording Disc has been inserted in loader
- ◆ use Digital Audio CD-R or Digital Audio CD-RW discs.

01.04 TYPENUMBER(S): **CDR538, CDR560, CDR760**

INFORMATION : To solve “No copy“ problem in FW538 systems when recording digitally new software version V2.4. has been introduced.

With SW V2.4 the unit will go into Record Standby after recording instead of Stop. If no further audio signals are presented for recording within 1 minute after going into Standby mode, the unit will go to Stop. This solves the problem of recording with CD Changer systems.

The new SW V2.4 has to be implemented for IC 7322 on the CDR Main Board and is available under service codenumber 4822 900 11306.

REMARKS : SW V2.4 has been introduced in production:
for CDR538/00S, CDR560/00S and CDR560/06S in week 9849 marked with AH-no. 03.
for CDR560/11S in week 9902 with AH-no. 02.
for CDR560/17 in week 9902 with AH-no. 01.

01.05 TYPENUMBER(S): **CDR538, CDR560, CDR760, CDR765**

INFORMATION : Whenever the CDR Loader Module is removed for replacement, the flex foil cables connecting the CDM-board and the CDR Main Board should be included in the shipment because they are part of the Loader Module.

REMARKS :

01.06 TYPENUMBER(S): **CDR538, CDR560, CDR760, CDR765**

INFORMATION : In the central repair which is organized for the CDR-loader module of above mentioned sets, the new part (4822 691 10737) is accompanied by a fill in form. Please take care for actual inserting of all available information which will help to make a diagnosis about the returned defective loader, in case this form is not filled in the restitution will not be activated. Find on one of the next pages the fill-in form for repair 4822 691 10737.

REMARKS :

01.07 TYPENUMBER(S): **CDR538, CDR560, CDR760, CDR765, CDR870, CDR880**

INFORMATION : A new Tray Locking Device has been released to increase the safety of the units during transportation. It is strongly recommended to use this new device whenever the unit needs to be transported. The new locking device can be ordered using the service codenumber 4822 466 12204.

REMARKS :

01.08 TYPENUMBER(S): **CDR765**

SYMPTOM : **IRIS CODE 7 5 5 3**
Shock sensitivity CD-Player part, audio-mutes on recorded CD after dubbing

CURE : The CD-Player module is very sensitive to shocks. Also during dubbing of an audio-CD, mutes can be heard on the recorded CD. These mutes are mostly located in track 1. Both of these problems can be solved by a software upgrade to V1.6 for IC 7220 on the CD Main Board. Service code number reads 4822 900 11309.

The shock sensitivity problem had already been addressed in item 08.06 of issue AS98.08 (98-10-30) of the Service Newsletter. The cure for the above problem(s), as mentioned in that Service Newsletter, needs to be changed as follows:

Upgrading IC 7220 on the CD Main Board to SW V1.6, solves the problems of shock sensitivity and audio mutes, regardless of the suspension grommets used in the CD-Player module.

REMARKS : Together with the new software V1.6, the original black suspension grommets will be reintroduced into production from week 9903 onwards.
The CD-Loader unit with modified software has been marked VN03.
The set with built-in modified software has been marked VN04.

01.09 TYPENUMBER(S): **CDR870**

INFORMATION : A printing error has occurred on the front page of the CDR870 Service Information Issue A98-250. The service codenumber of part 1520 should read 4822 218 11487 instead of 4822 218 11987.

REMARKS :

01.10 TYPENUMBER(S): **CDR870**

INFORMATION : In the central repair which is organized for the CDR-loader module of above mentioned sets, the new part (4822 691 10644) is accompanied by a fill in form. Please take care for actual inserting of all available information which will help to make a diagnosis about the returned defective loader, in case this form is not filled in the restitution will not be activated. Find on one of the next pages the fill-in form for repair 4822 691 10644.

REMARKS : Instead of 4822 691 10644 can be delivered 4822 214 12745 (CDR880 version of the module). This loader module is backwards compatible for CDR870.

01.11 TYPENUMBER(S): **CDR880**

INFORMATION : In the central repair which is organized for the CDR-loader module of above mentioned sets, the new part (4822 214 12745) is accompanied by a fill in form. Please take care for actual inserting of all available information which will help to make a diagnosis about the returned defective loader, in case this form is not filled in the restitution will not be activated. Find on one of the next pages the fill-in form for repair 4822 214 12745.

REMARKS :

01.12 TYPENUMBER(S): **CDR880**

INFORMATION : Upgrading of software V1.4 to V1.7 for EPROM 7322 (service codenumber 4822 900 11271) will make it possible to erase the Table Of Contents (TOC) when unfinalizing a CD-RW disc.

This software upgrade will also automatically stop a recording session after the source has stopped or after disconnection of the source (Autostop).

REMARKS : SW V1.7 will be introduced from week 9904 onwards with AH-no. 02 for CDR880/00, CDR880/00S, CDR880/06S and CDR880/17.

01.13 TYPENUMBER(S): **FW14, FW15, FW36, FW56, FW351C/37, FW360C, FW620C, FW650C, FW670P, FW680V**
AZ3705, AZ3708 (PORTABLE AUDIO)
FW350C, M6, M25, M26 (GRUNDIG)
74MX540 (MARANTZ)

INFORMATION : **Replacement of CDM12.1 for 7-Disc Changer**
Production of CDM12.1 will stop. For service purpose CDM12.1 (4822 691 30278) will be replaced by service kit VAM1201 (4822 310 11263) when stock depletes.

For the above mentioned sets with 7-Disc Changer the new VAM1201 does not fit.

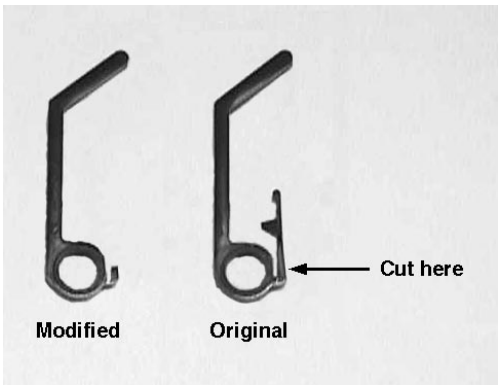
As an alternative, the CDM12.1 can be replaced by CDM12.1/T (4822 691 30343) without any further modifications.

REMARKS :

01.14 TYPENUMBER(S): **FW45C, FW52C, FW55C, FW62C, FW65C, FW72C, FW316C, FW318C, FW320C, FW338C, FW339C, FW346C, FW356C, FW358C, FW359C, FW380C, FW386C, FW510C, FW520C, FW530C, FW535C, FW538, FW550C, FW560C, FW570C, FW575C, FW754P, FW755P, FW765P, FW775P, FW795W, FW850C, FW855C, FW860P, FW880P, FW880W**

SYMPTOM : **IRIS CODE 1 6 7 X**
When CD tray was activated to open, the tray would move out and immediately go in again or stop at half way.
When the CD tray is in motion the inside arm of the switch bracket (pos 123) hits the micro switch earlier than the main lever.

CURE : The problem can be solved by cutting a section of the inside arm of the switch bracket as indicated below:



REMARKS : The phenomenon can be simulated by tilting the set at either side for 1cm or more.

01.15 TYPENUMBER(S): **FW335, FW355C, FW365C, FW375P, FW710C, FW725C, FW730C, FW745C, FW750C, FW770P, FW780P, FW790P**

SYMPTOM : **IRIS CODE 1 5 4 1**
Hum & crackling sound problem

CURE : The problem is caused by defective capacitors at positions 2617 and 2618 on the AF3-board.
It is resolved by replacing them with new ones.

REMARKS :

01.16 TYPENUMBER(S): **FW362, FW363, FW372C, FW373C, FW395C**

INFORMATION : Correction to the Service Test Program
To enter the Service Test Program hold buttons B1 & C4 depressed while powering-up the set.
B1 = Program (interactive display - top right vertical button)
C4 = Tuning Up (interactive display - far right horizontal button)

REMARKS :

GUIDANCE FORM
REPAIRABLE UNIT 4822 691 10737

Please fill in this form and return it with the defective unit.

Typenumber (unit demounted from set)	**:**	**CDR760/**.....
or	**:**	**CDR**.....
Serial number	**:**	.....
Unit serial number (CDR Module)	**:**	**CDL3610/01;**....**VO**.....

Warning: Only Returned Loader with filled in Guidance form are accepted.

In case CDR-disc has been damaged, please include this damaged disc with the exchanged CDR Module.

DISC DAMAGED?	**Y/N**
DISC INCLUDED?	**Y/N**

INFORMATION GATHERED VIA SERVICE TEST MODE

Switch POWER ON,
Activate OPEN/CLOSE,
Insert test disc SBC444A, or any other CD-Digital Audio disc;
switch POWER OFF,
<PLAY>+<NEXT>+<POWER ON> keep all keys pressed for 2 seconds
During test:
Blinking 'D' on display (about 2 minutes!!);
Blinking 'B' on display (for some seconds).

ERROR INDICATION (on display) according to table below: Y/N

	ON DISPLAY	**IRIS SYMPTOM CODE**	**YES *)**
DISPLAY TEST RESULT			
RAM error	**DERR 1**	15....	**)
ROM error	**DERR 2**	16....	**)
EEPROM error	**DERR 3**	16....	**)
DAIO error	**DERR 4**	15....	**)
BASIC ENGINE TEST RESULT			
Communication bus error	**BERR 1**	15....	
Basic Engine error	**BERR 2**	15....	
Disc test error	**BERR 3**	16....	

*) insert cross at seen display result
**) replace concerned mainboard

IN CASE OF NO ERROR INDICATION;
OTHER PROBLEMS OCCURED AT:

PLAYBACK	CD	CDR Unfinalised	CDR Finalised	CDRW Unfinalised	CDRW Finalised
Y/N					
RECORDING	**CD**	**CDR Unfinalised**	**CDR Finalised**	**CDRW Unfinalised**	**CDRW Finalised**
Y/N	-----				

IRIS CONDITION CODE:

DESCRIPTION	CONDITION CODE
Constantly	1...
Intermittently	2...
After a while	3...
In a hot environment	4...
In a cold environment	5...

IRIS SYMPTOM CODE CONCERNING AUDIO

Audio	Audio	Audio	Audio	Audio
No sound	Level	Quality	Noisy	Poor recording
.51.	.52.	.53.	.54.	.56.

OTHER COMPLAINT DESCRIPTION :
(IRIS SYMPTOM CODE: .....)

Return the defective module complete assembled in original package to:

Invoice to:
Philips Consumer Electronics B.V. 670005
Philips Consumer Service - F&A Reporting
Glaslaan 2, Building SBP5
5616 LW Eindhoven
The Netherlands

Ship to:
Philips Consumer Electronics B.V. 676723
LO PCS WAREHOUSING
Glaslaan 2, Building SBI p
5616 LW Eindhoven
The Netherlands
ATT: Mr. C. Lieberwirth

CORRECTIVE ACTION/SOLUTION
(to be filled in at central repair workshop): Report number:.....

Iris repair code:.....

GUIDANCE FORM
REPAIRABLE UNIT 4822 691 10644

Please fill in this form and return it with the defective unit.

Typenumber (unit demounted from set)	**:**	**CDR870/**.....
or	**:**	**CDR**.....
Serial number	**:**	.....
Unit serial number (CDR Module)	**:**	**CDL3610/01;** ....**VO**.....

Warning: Dismantling of the CDR Module is not allowed. Guarantee will be invalidated. Only Returned Modules with filled in Guidance form are accepted.

In case CDR-disc has been damaged, please include this damaged disc with the exchanged CDR Module.

DISC DAMAGED?	**Y/N**
DISC INCLUDED?	**Y/N**

INFORMATION GATHERED VIA SERVICE TEST MODE
Switch POWER ON,
Activate OPEN/CLOSE,
Insert test disc SBC444A, or any other CD-Digital Audio disc;
switch POWER OFF,
<PLAY>+<NEXT>+<POWER ON> keep all keys pressed for 2 seconds
During test:
Blinking 'D' on display (about 2 minutes!!);
Blinking 'B' on display (for some seconds).

ERROR INDICATION (on display) according to table below: Y/N

	ON DISPLAY	**IRIS SYMPTOM CODE**	**YES *)**
DISPLAY TEST RESULT			
RAM error	**DERR 1**	15....	
ROM error	**DERR 2**	16....	
EEPROM error	**DERR 3**	16....	
DAIO error	**DERR 4**	15....	
GDIN error	**DERR 5**	15....	
BASIC ENGINE TEST RESULT			
Communication bus error	**BERR 1**	15....	
Basic Engine error	**BERR 2**	15....	
Disc test error	**BERR 3**	16....	

*) insert cross at seen display result

IN CASE OF NO ERROR INDICATION;
OTHER PROBLEMS OCCURED AT:

PLAYBACK	CD	CDR Unfinalised	CDR Finalised	CDRW Unfinalised	CDRW Finalised
Y/N					
RECORDING	**CD**	**CDR Unfinalised**	**CDR Finalised**	**CDRW Unfinalised**	**CDRW Finalised**
Y/N	-----				

IRIS CONDITION CODE:

DESCRIPTION	CONDITION CODE
Constantly	1...
Intermittently	2...
After a while	3...
In a hot environment	4...
In a cold environment	5...

IRIS SYMPTOM CODE CONCERNING AUDIO

Audio	Audio	Audio	Audio	Audio
No sound	Level	Quality	Noisy	Poor recording
.51.	.52.	.53.	.54.	.56.

OTHER COMPLAINT DESCRIPTION :
(IRIS SYMPTOM CODE: .....)

Return the defective module complete assembled in original package to:

Invoice to:
Philips Consumer Electronics B.V. 670005
Philips Consumer Service - F&A Reporting
Glaslaan 2, Building SBP5
5616 LW Eindhoven
The Netherlands

Ship to:
Philips Consumer Electronics B.V. 676723
LO PCS WAREHOUSING
Glaslaan 2, Building SBI p
5616 LW Eindhoven
The Netherlands
ATT: Mr. C. Lieberwirth

CORRECTIVE ACTION/SOLUTION
(to be filled in at central repair workshop): Report number:.....

Iris repair code:.....

GUIDANCE FORM
REPAIRABLE UNIT 4822 214 12745

Please fill in this form and return it with the defective unit.

Typenumber (unit demounted from set)	**:**	**CDR880/**.....
or	**:**	**CDR**.....
Serial number	**:**	.....
Unit serial number (CDR Module)	**:**	**CDL3610/01;** ....**VO**.....

Warning: Dismantling of the CDR Module is not allowed. Guarantee will be invalidated. Only Returned Modules with filled in Guidance form are accepted.

In case CDR-disc has been damaged, please include this damaged disc with the exchanged CDR Module.

DISC DAMAGED?	**Y/N**
DISC INCLUDED?	**Y/N**

INFORMATION GATHERED VIA SERVICE TEST MODE
Switch POWER ON,
Activate OPEN/CLOSE,
Insert test disc SBC444A, or any other CD-Digital Audio disc;
switch POWER OFF,
<PLAY>+<NEXT>+<POWER ON> keep all keys pressed for 2 seconds
During test:
Blinking 'D' on display (about 2 minutes!!);
Blinking 'B' on display (for some seconds).

ERROR INDICATION (on display) according to table below: Y/N

	ON DISPLAY	**IRIS SYMPTOM CODE**	**YES *)**
DISPLAY TEST RESULT			
RAM error	**DERR 1**	15....	
ROM error	**DERR 2**	16....	
EEPROM error	**DERR 3**	16....	
DAIO error	**DERR 4**	15....	
GDIN error	**DERR 5**	15....	
BASIC ENGINE TEST RESULT			
Communication bus error	**BERR 1**	15....	
Basic Engine error	**BERR 2**	15....	
Disc test error	**BERR 3**	16....	

*) insert cross at seen display result

IN CASE OF NO ERROR INDICATION;
OTHER PROBLEMS OCCURED AT:

PLAYBACK	CD	CDR Unfinalised	CDR Finalised	CDRW Unfinalised	CDRW Finalised
Y/N					
RECORDING	**CD**	**CDR Unfinalised**	**CDR Finalised**	**CDRW Unfinalised**	**CDRW Finalised**
Y/N	-----				

IRIS CONDITION CODE:

DESCRIPTION	CONDITION CODE
Constantly	1...
Intermittently	2...
After a while	3...
In a hot environment	4...
In a cold environment	5...

IRIS SYMPTOM CODE CONCERNING AUDIO

Audio	Audio	Audio	Audio	Audio
No sound	Level	Quality	Noisy	Poor recording
.51.	.52.	.53.	.54.	.56.

OTHER COMPLAINT DESCRIPTION :
(IRIS SYMPTOM CODE: .....)

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Glaslaan 2, Building SBI p
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The Netherlands
ATT: Mr. C. Lieberwirth

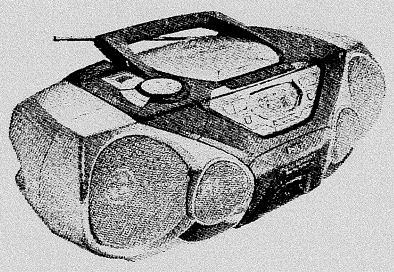
CORRECTIVE ACTION/SOLUTION
(to be filled in at central repair workshop): Report number:.....

Iris repair code:.....

CD Stereo Radio Recorder

Service
Service
Service

AZ1570
AZ1575
all versions



Service Manual

COMPACT disc DIGITAL AUDIO

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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

CLASS 1 LASER PRODUCT

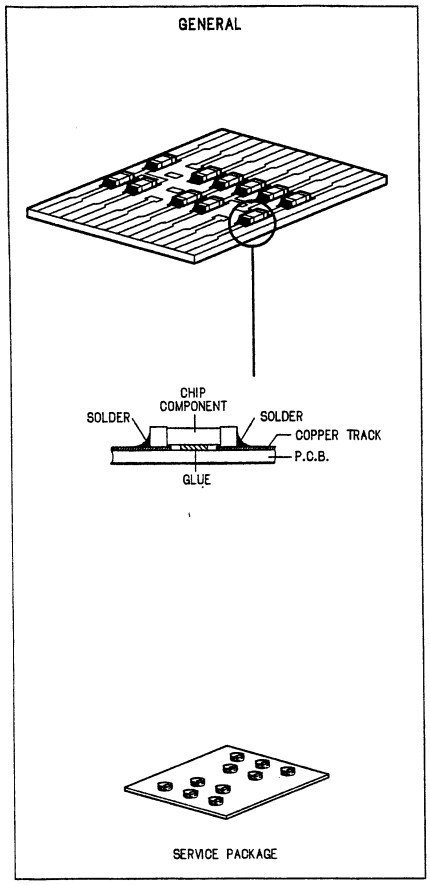
©Copyright 1995 Philips Consumer Electroncis B.V. Eindhoven,The Netherlands
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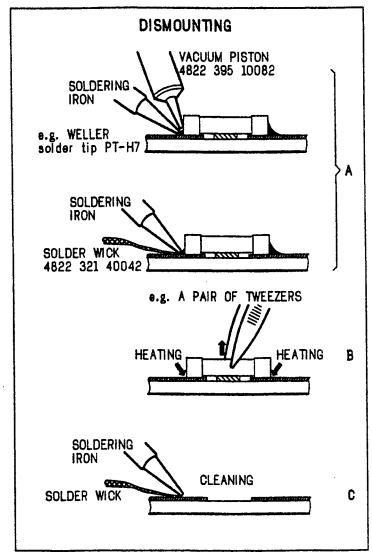
Published by SS 0038 Service Audio Copyright reserved Subject to modification GB 3140 785 22500

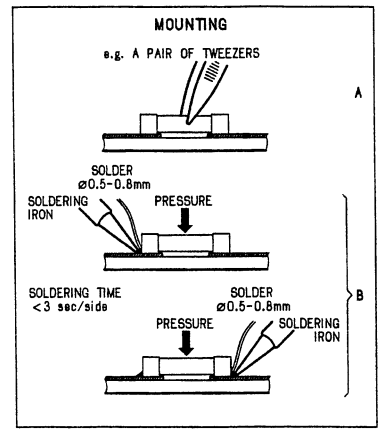
PCS 104 626

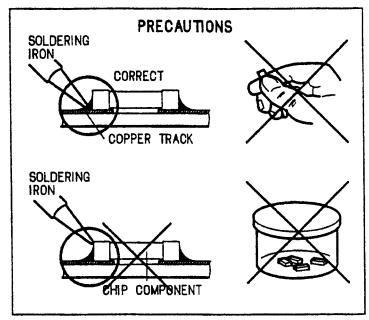
PHILIPS

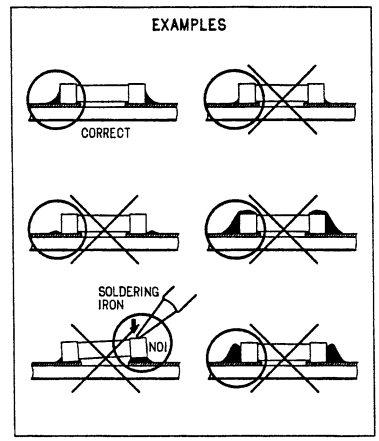
HANDLING CHIP COMPONENTS











© WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

ESD



f ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

d WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

n WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

i AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

©

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

f

Les normes de sécurité exigent que l´appareil soit remis à l´état d´origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

SAFETY



d

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

n

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

i

Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

CLASS 1 LASER PRODUCT

© **DANGER**: Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

s Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

Advarsel !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

ß Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

©

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

f

"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/00/14 :	230 V
	-/01/11/16 :	120 / 230 V
	-/05/10 :	240 V
	-/13 :	220V
	-/17 :	120 V
Mains frequency	-/00/05/10/14 :	50 Hz
	-/01/11/16 :	50 / 60 Hz
	-/13/17 :	60 Hz
Battery	mains :	9 V (R20 x 6)
	remote :	3 V (R6 x 2)
Power consumption	:	35 W
Dimension (W x H x D)	:	505 x 163 x 245 mm
Weight	:	4.5 Kg

AMPLIFIER

Output power	mains :	2 x 1.6 W
	battery :	2 x 1.6 W
Speaker impedance	:	2 x 4 ohm
	:	2 x 8 ohm
Frequency response	:	100 Hz - 10 kHz (±3dB)

TUNER - FM SECTION

Tuning range	:	87.5 - 108 MHz
	-/14 :	65.81 MHz - 74 MHz
IF frequency	:	10.7 MHz ± 0.03 MHz
Sensitivity	:	18 dB at 26dB S/N
Selectivity	:	55 dB at 300kHz
IF rejection	:	90 dB
Image rejection	:	40 dB

TUNER - AM SECTION

Tuning range	MW :	531 - 1602 kHz
	-/17 :	530 - 1700 kHz
	LW :	153 - 279 kHz
Sensitivity	MW :	2000 µV/m at 26dB S/N
	LW :	4500 µV/m at 26dB S/N
Selectivity	MW :	23 dB
	LW :	29 dB
IF rejection	MW :	60 dB
	LW :	60 dB
Image rejection	MW :	37 dB
	LW :	38 dB

AUDIO CASSETTE RECORDER

Number of tracks	:	1 stereo
Tape speed	:	4.76 cm/sec ± 3%
Wow & flutter	:	< 0.48 JIS UWTD
Fast wind/rewind C60	:	< 110 sec.
Frequency response	P/B :	125 - 6300 Hz
S/N ratio	:	45 dB

COMPACT DISC

Frequency response	:	100 Hz - 10 kHz
S/N ratio	:	60 dB
Channel difference	1 kHz :	2 dB
Channel crosstalk	1 kHz :	40 dB
Laser wavelength	:	780 ± 20 nm
Laser light power	:	< 0.3 mW

SERVICE TOOLS

TORX T10 screwdriver with shaftlength 150mm.....4822 395 50423
TORX screwdriver set SBC 163.....4822 295 50145

Audio signal disc SBC 429.....4822 397 30184
Playability test disc SBC 444.....4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155

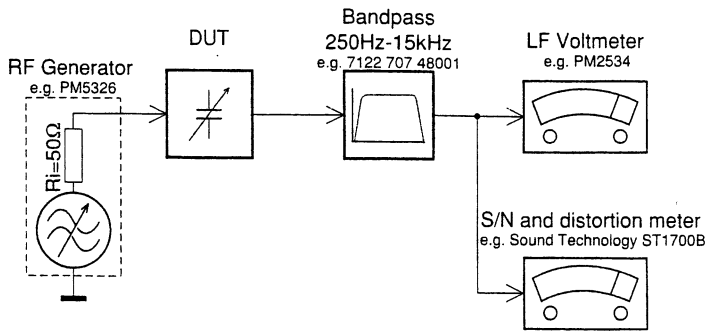
Universal test cassette Fe SBC 420.....4822 397 30071

AVAILABLE ESD PROTECTION EQUIPMENT

anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25mm	4822 466 10958
anti-static wristband		4822 395 10223
connection box (3 press stud connections, 1M)		4822 320 11307
extendible cable (2m, 2M , to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2M , to connect table mat to connection box)		4822 320 11306
earth cable (1M , to connect any product to mat or to connection box)		4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)		4822 310 10671
wristband tester		4822 344 13999

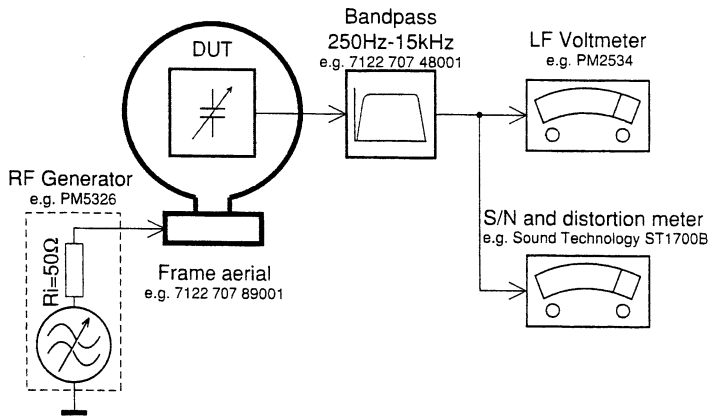
SERVICE MEASUREMENTS

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

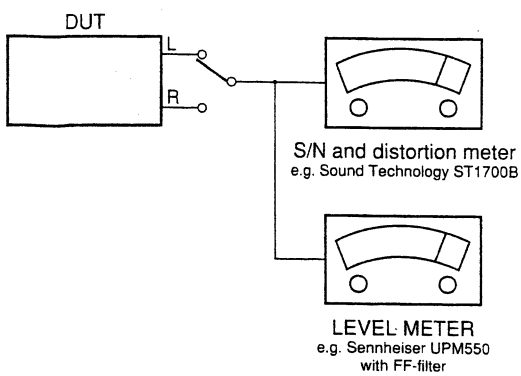
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

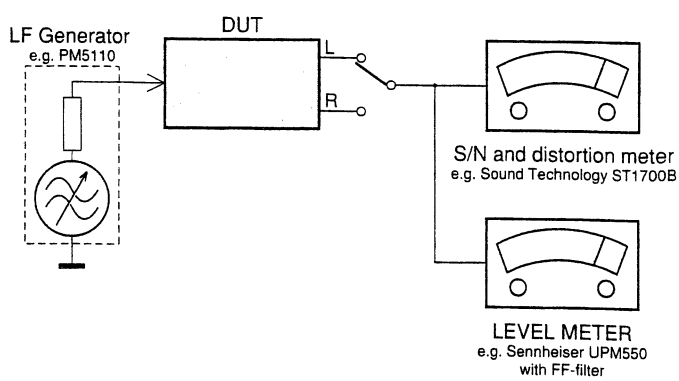
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



RECORDER

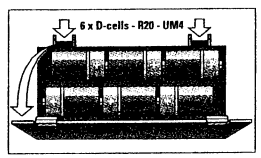
Use Universal Test Cassette **Fe** SBC420 4822 397 30071

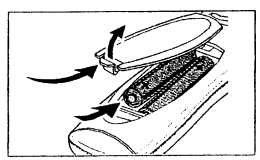


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Whenever convenient, use the power supply if you want to conserve battery life. Make sure you remove the plug from the set and wall socket before inserting batteries.

BATTERIES (OPTIONAL)





1. Open the battery compartment and insert six batteries, type **R-20**, **UM-4** or **D-cells**, (preferably alkaline) with the correct polarity as indicated by the "+" and "-" symbols inside the compartment.

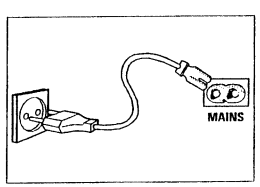
Remote control (supplied)

Open the battery compartment and insert two batteries, type **AAA**, **R03** or **UM1** (preferably alkaline).

2. Replace the compartment door, making sure the batteries are firmly and correctly in place. The set is now ready to operate.
- If **BATT LOW** lights up, battery power is running low.
- The **BATT LOW** indicator eventually goes out if the batteries are too weak.

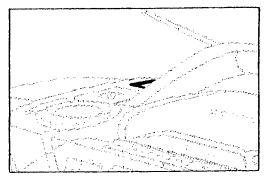
- *Incorrect use of batteries can cause electrolyte leakage and will corrode the compartment or cause the batteries to burst. Therefore:*
  - *Do not mix battery types*, e.g. alkaline with carbon zinc. Only use batteries of the same type for the set.
  - When inserting new batteries, do not try to mix old batteries with the new ones.
  - Remove the batteries if the set is not to be used for a long time.
  - ***Batteries contain chemical substances, so they should be disposed of properly.***

USING AC POWER



1. Check if the mains voltage ***as shown on the type plate located on the back of the set***, corresponds to your local power supply. If it does not, consult your dealer or service centre.
2. If your set is equipped with a voltage selector, adjust the selector so that it matches with the local mains.
3. Connect the mains lead to the wall socket and the set is now ready for use.
4. To disconnect the set from the mains completely, remove the plug from the wall socket.

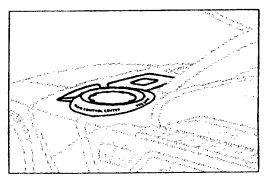
SWITCHING ON AND OFF

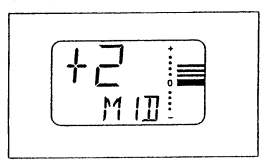


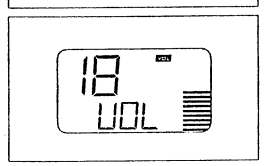
- Adjust the **POWER** slider to the desired sound source: **CD**, **TUNER** or **TAPE**.
- The set is switched off when the **POWER** slider is in the **TAPE/OFF** position and the keys on the tape deck are released.

– The volume, sound settings and tuner presets will be retained in the set's memory.

ADJUSTING VOLUME AND SOUND







1. Turn the **VOLUME/ SOUND CONTROL CENTER** control clockwise to increase or anti-clockwise to decrease volume on the set (or press **VOLUME 3** or **4** on the remote control).

™ Display shows the volume level indication **VOL** and a number from 0-32.

2. To adjust the bass, mid and high frequency levels, press **DIGITAL EQUALIZER** once or more until the desired option is displayed. While the option is shown, turn the **VOLUME/ SOUND CONTROL CENTER** control to increase or decrease (- 5 to + 5 maximum) the desired frequency.

™ **VOLUME** can also be adjusted in this way with a level range from 0-32.

3. Press **DIGITAL DBB** to switch dynamic bass boost on or off.

™ If on, the **DIGITAL DBB** light goes on.

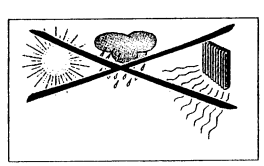
4. Press **INCREDIBLE SURROUND** to switch the surround sound effect on or off.

™ If on, the **INCREDIBLE SURROUND** light goes on.

Note: *The effect of INCREDIBLE SURROUND may vary with different types of music.*

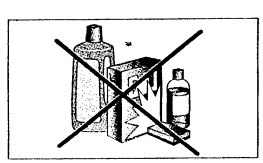
GENERAL INFORMATION

General maintenance



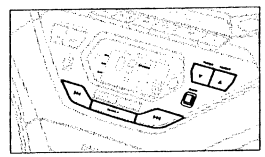
- Do not expose the set, batteries, CDs or cassettes to humidity, rain, sand or excessive heat caused by heating equipment or direct sunlight.
- To clean the set, use a soft, slightly dampened chamois leather. Do not use any cleaning agents containing alcohol, ammonia, benzene or abrasives as these may harm the housing.

Safety information



- Place the set on a hard and flat surface so that the system does not tilt. Make sure there is adequate ventilation to prevent the system from overheating.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.

Tuning to radio stations

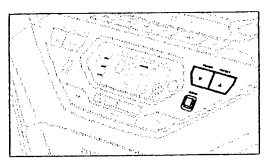


1. Select **TUNER** source.
™ tU is displayed briefly and then the radio station frequency is shown.
2. Press **BAND** once or more to select your waveband.
3. Press **SEARCH** or § (on the remote control, **TUNING** or §) and release when the frequency in the display starts running.
™ The tuner automatically tunes to a station of sufficient reception. Display shows Srch during automatic tuning.
™ If an FM station is received in stereo, **STEREO** is shown.
4. Repeat step *3* if necessary until you find the desired station.
- To tune to a weak station, press **SEARCH** or § briefly and repeatedly until you have found optimal reception.

To improve radio reception:

- For ***FM***, pull out the telescopic aerial.
  Incline and turn the aerial. Reduce its length if the signal is too strong (very close to a transmitter).
- For ***MW (AM)***, the set is provided with a built-in aerial so the telescopic aerial is not needed. Direct the aerial by turning the whole set.

Programming radio stations

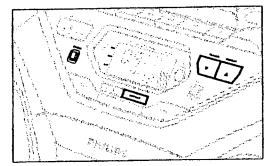


You can store up to a total of 30 radio stations in the memory.
1. Tune to your desired station (see Tuning to radio stations).
2. Press **PROG** to activate programming.
™ Display: **PROG** flashes.
3. Press **PRESET 3** or **4** once or more to allocate a number from 1 to 30 to this station.
4. Press **PROG** again to confirm the setting.
™ Display: **PROG** disappears, the preset number and the frequency of the preset station are shown.
5. Repeat the above four steps to store other stations.
- You can overwrite a preset station by storing another frequency in its place.

Tuning to preset stations

Press **TUNER PRESET 4** or **3** until the desired preset station is displayed.

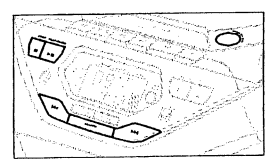
Changing tuning grid *(some versions only)*



In North and South America the frequency step between adjacent channels in the AM and FM band are **10 KHz** and **100 KHz** respectively. In the rest of the world this step is **9 KHz** and **50 KHz**. Usually the frequency step has been preset in the factory for your area.
1. Check that the set is in the **TAPE/OFF** position and switched off.
2. *To select 9KHz*: Simultaneously, press **PROG** and **REPEAT** on the set.
3. Switch the set on to **TUNER** and then release the controls.
- *To select 10KHz*: Repeat steps **1-3** but in step **2**, simultaneously, press **PROG** and **TUNING** § on the set.

™ When you tune to radio stations, the display shows tuning in either steps of **9** or **10**.
™ All preset stations will be affected and you may need reprogramme the preset stations.

Playing a CD



1. Select **CD** source.
2. Press **OPEN•CLOSE** to open the CD door.
™ Display: Cd OPEn when you open the CD door.
3. Insert a CD or CD-R(W) with the printed side facing up and press **OPEN•CLOSE** to close the CD door.
™ Display: dISC as the CD player scans the contents of a CD. The total number of tracks and playing time are then shown.
™ Display: nF dISC is shown if the CD R(W) is not finalised.
4. Press **PLAY•PAUSE 2;** (on the remote control **2;**) to start playback.
™ Display: Current track number and elapsed playing time of the track during CD playback.
5. To interrupt playback press **PLAY•PAUSE 2;**.
Press **PLAY•PAUSE 2;** again to resume play.
™ The display freezes and the elapsed playing time flashes when playback is paused.
6. To stop CD playback, press **STOP 9**

Note: *CD play will also stop when:*
– the CD door is opened;
– the CD has reached the end (unless you have selected REPEAT ALL);
– you select another source: TAPE / TUNER.

Selecting a different track

- Press **SEARCH** or § on the set, (on the remote control ¡ or ™) once or repeatedly until the desired track number appears in the display.
- If you have selected a track number shortly after loading a CD or in the PAUSE position, you will need to press **PLAY•PAUSE 2;** (on the remote control **2;**) to start playback.

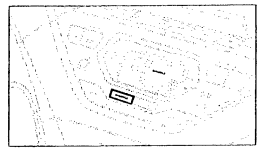
Finding a passage within a track

1. Press and hold down on **SEARCH** or § (on the remote control **5** or **6**).
– The CD is played at high speed and low volume.
2. When you recognize the passage you want, release **SEARCH** or §.
– Normal playback continues.

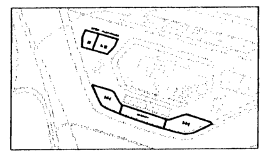
Note:
During a CD programme or if SHUFFLE/ REPEAT active, searching is only possible within a track.

Different play modes: SHUFFLE and REPEAT

You can select and change the various play modes before or during playback. The play modes can also be combined with PROGRAM.
SHUFFLE - tracks of the entire CD/ programme are played in random order
SHUFFLE and **REPEAT ALL** - to repeat the entire CD/ programme continuously in random order
REPEAT ALL - to repeat the entire CD/ programme
REPEAT and **SHUFFLE REPEAT** - plays the current (random) track continuously



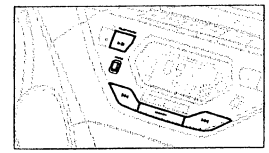
1. To select your play mode, press the **SHUFFLE** or **REPEAT** button before or during playback until the display shows the desired function.
2. Press **PLAY•PAUSE 2;** (on the remote control **2;**) to start playback if in the STOP position.
- Playback starts immediately if you have selected a SHUFFLE mode.



3. To return to normal playback, press the respective **SHUFFLE** or **REPEAT** button until the various SHUFFLE / REPEAT modes are no longer displayed.
– *You can also press* **STOP 9** *to cancel your play mode.*

Programming track numbers

Programme in the STOP position to select and store your CD tracks in the desired sequence. If you like, store any track more than once. Up to 20 tracks can be stored in the memory.

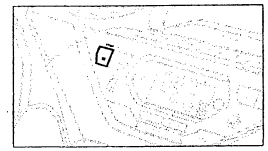


1. Use the **SEARCH** or § on the set, (on the remote control ¡ or ™) to select your desired track number.
2. Press **PROG**.
™ Display: **PROG** and the selected track number. Prog appears briefly.
™ If you attempt to programme without first selecting a track number, no SEL is shown.
3. Repeat steps **1-2** to select and store all desired tracks.
™ FULL is displayed if you attempt to programme more than 20 tracks.
4. To start playback of your CD programme, press **PLAY•PAUSE 2;** (on the remote control **2;**).
™ If you have selected the tracks during CD play, first press **STOP 9**, then **PLAY•PAUSE 2;**.

Reviewing the programme

In the stop position or during playback, press and hold down PROG for a while until the display shows all your stored track numbers in sequence.

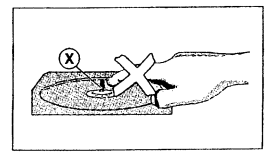
Erasing a programme



You can erase the programme by:
– pressing **STOP 9** once in the STOP position;
– pressing **STOP 9** twice during playback;
- The display shows no Prog briefly and **PROG** disappears.

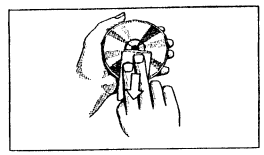
The programme is also erased by:
– pressing the CD door open;
– selecting another source: TAPE / TUNER.

CD player and CD handling

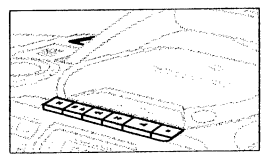


- If the CD player cannot read CDs correctly, use a commonly available cleaning CD to clean the lens before taking the set to repair. Other cleaning methods may destroy the lens.
- The lens of the CD player should never be touched!
- Sudden changes in the surrounding temperature can cause condensation to cloud over on the lens of your CD player. Playing a CD is then not possible. Do not attempt to clean the lens but leave the set in a warm environment until the moisture evaporates.
- Always keep the CD compartment closed to avoid dust on the lens.

- To take a CD out of its box, press the centre spindle while lifting the CD. Always pick up the CD by the edge and return the CD to its box after use to avoid scratching and dust.
- To clean the CD, wipe in a straight line from the centre towards the edge using a soft, lint-free cloth. Do not use cleaning agents as they may damage the disc.
- *Never* write on a CD or attach any stickers to it.



Cassette playback



1. Select **TAPE** source.

™ The display shows TAPE throughout tape operation.

2. Press **OPEN•STOP / 9** to open the cassette door.
3. Insert a recorded cassette and close the cassette door.
4. Press **PLAY 1** to start playback.
5. To interrupt playback press **PAUSE ;**. To resume, press this key again.
6. By pressing **SEARCH 5** or **6** on the set fast winding of the tape is possible in both directions.
7. To stop the tape, press **OPEN•STOP / 9**.

- The keys are automatically released at the end of the tape, except if **PAUSE ;** has been activated.

GENERAL INFORMATION ON RECORDING

- Recording is permissible insofar as copyright or other rights of third parties are not infringed.
- This deck is not suited for recording on CHROME (IEC II) or METAL (IEC IV) type cassettes. For recording, use only NORMAL type cassettes (IEC I) on which the tabs have not been broken.
- The best recording level is set automatically. Altering the VOLUME, INCREDIBLE SURROUND, DIGITAL EQUALIZER or DBB controls will not affect the recording in progress.
- At the very beginning and end of the tape, no recording will take place during the 7 seconds, when the leader tape passes the recorder heads.
- To protect a tape from accidental erasure, have the tape in front of you and break out the left tab.
  Recording on this side is no longer possible. To record over this side again, cover the tabs with a piece of adhesive tape.

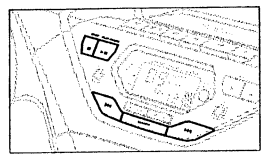
Synchro Start CD recording

1. Select CD source.
2. Insert a CD and if desired, programme track numbers.
3. Press **OPEN•STOP / 9** to open the cassette holder.
4. Insert a suitable tape into the cassette deck and close the cassette door.
5. Press **RECORD O** to start recording.

– Playing of the CD programme starts automatically from the beginning of the programme. It is not necessary to start the CD player separately.

To select and record a particular passage within a track:

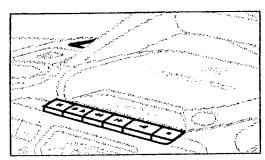
- Press and hold down on **SEARCH** or **§** (on the remote control **5** or **6**).
- When you recognize the passage you want, release **SEARCH** or **§**.
- To interrupt CD playback press **PLAY•PAUSE 2;** (on the remote control **2;**).
- Recording will begin from this exact point in the track when you press **RECORD 9**.



6. For brief interruptions during recording, press **PAUSE ;**. To resume recording, press **PAUSE ;** again.
7. To stop recording, press **OPEN•STOP / 9**.

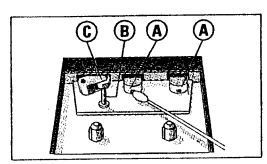
Recording from the tuner

1. Tune to the desired radio station (see Tuning to radio stations).
2. Press **OPEN•STOP / 9** to open the cassette door.
3. Insert a suitable tape into the cassette deck and close the cassette door.
4. Press **RECORD O** to start recording.
5. For brief interruptions, press **PAUSE ;** To resume recording, press **PAUSE ;** again.
6. To stop recording, press **OPEN•STOP / 9**.



Tape deck maintenance

To ensure quality recording and playback of the tape deck, clean parts **A**, **B** and **C** shown in the diagram below, after approx. 50 hours of operation, or on average once a month. Use a cotton bud slightly moistened with alcohol or a special head cleaning fluid to clean both decks.



1. Open the cassette holder by pressing **OPEN•STOP / 9**.
2. Press **PLAY 1** and clean the rubber pressure rollers **C**.
3. Press **PAUSE ;** and clean the magnetic heads **A** and also the capstan **B**.
4. After cleaning, press **OPEN•STOP / 9**.

Note:

Cleaning of the heads can also be done by playing a cleaning cassette through once.

If a fault occurs, first check the points listed below before taking the set for repair.
If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: ***Do not open the set as there is a risk of electric shock. Under no circumstances should you try to repair the set yourself, as this will invalidate the guarantee.***

PROBLEM
– *POSSIBLE CAUSE*
• REMEDY

No sound/power
– *VOLUME not adjusted*
• Adjust the VOLUME
– *Headphones connected*
• Disconnect headphones
– *Mains lead not securely connected*
• Connect AC mains lead properly

Severe radio hum or noise
– *Electrical interference: set too close to TV, VCR or computer*
• Increase the distance

Poor radio reception
– *Weak radio signal*
• FM: Direct the FM telescopic aerial for optimum reception

NO DISC indication
– *CD badly scratched or dirty*
• Replace/ clean CD, see Maintenance
– *Laser lens steamed up.*
• Wait until lens has cleared

NF DISC indication
– *CD-R(W) is blank or the disc is not finalised*
• Use a finalised CD-R(W)

The CD skips tracks
– *CD damaged or dirty*
• Replace or clean CD
– *SHUFFLE or PROGRAM is active*
• Switch off SHUFFLE / PROGRAM

Poor cassette sound quality
– *Dust and dirt on the heads, etc.*
• Clean deck parts, see Maintenance
– *Use of incompatible cassette types (METAL or CHROME)*
• Only use NORMAL (IEC I) for recording

Recording does not work
– *Cassette tab(s) may be broken*
• Apply a piece of adhesive tape over the missing tab space.

Remote control does not function properly
– *Batteries exhausted*
• Insert fresh batteries
– *Batteries incorrectly inserted*
• Insert the batteries correctly
– *Distance/ angle between the set too large*
• Reduce the distance/ angle.

Environmental information

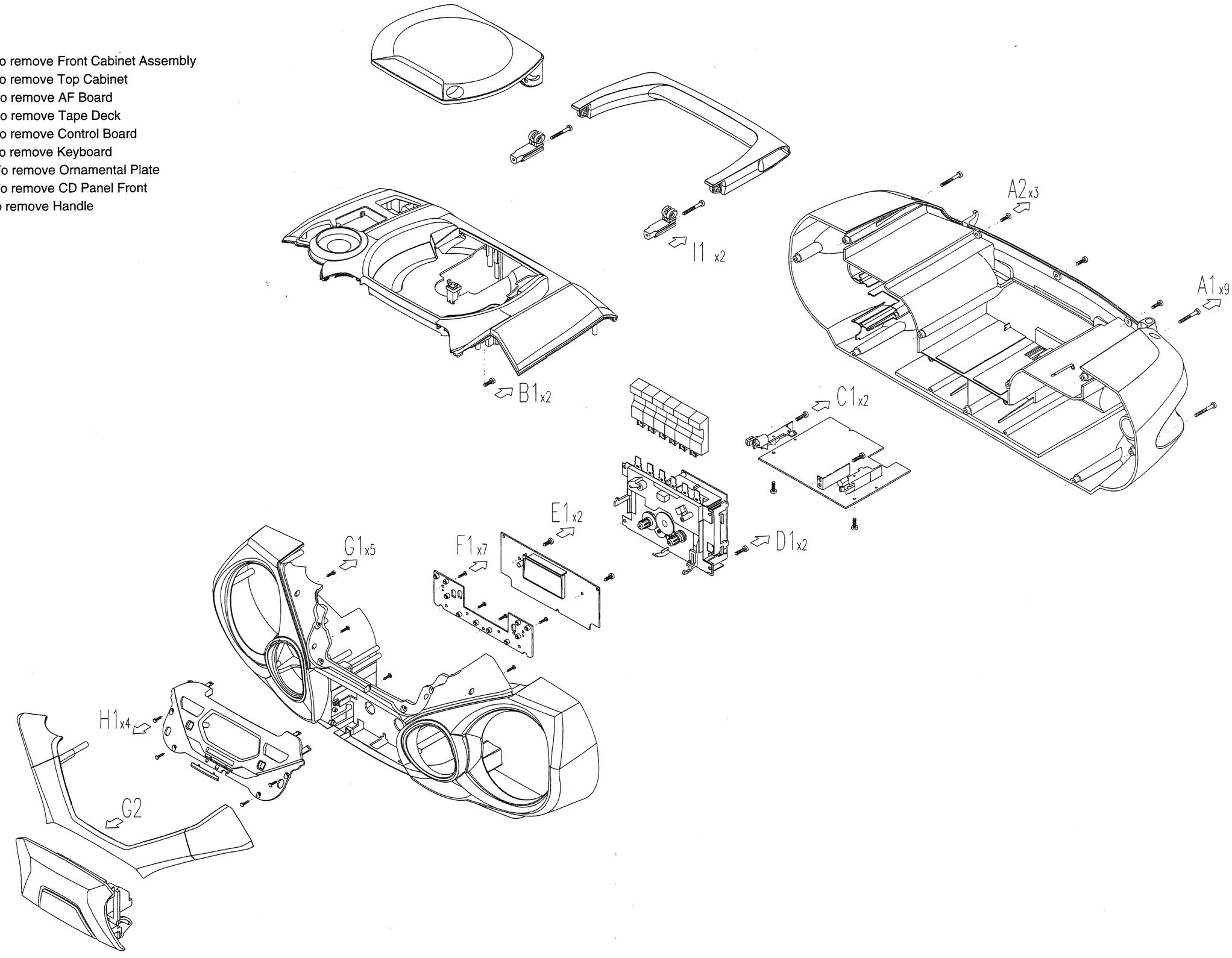
All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easy to separate into three mono-materials: cardboard (box), expandable polystyrene (buffer), polyethylene (bags, protective foam).

Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, exhausted batteries and old equipment.

4-1

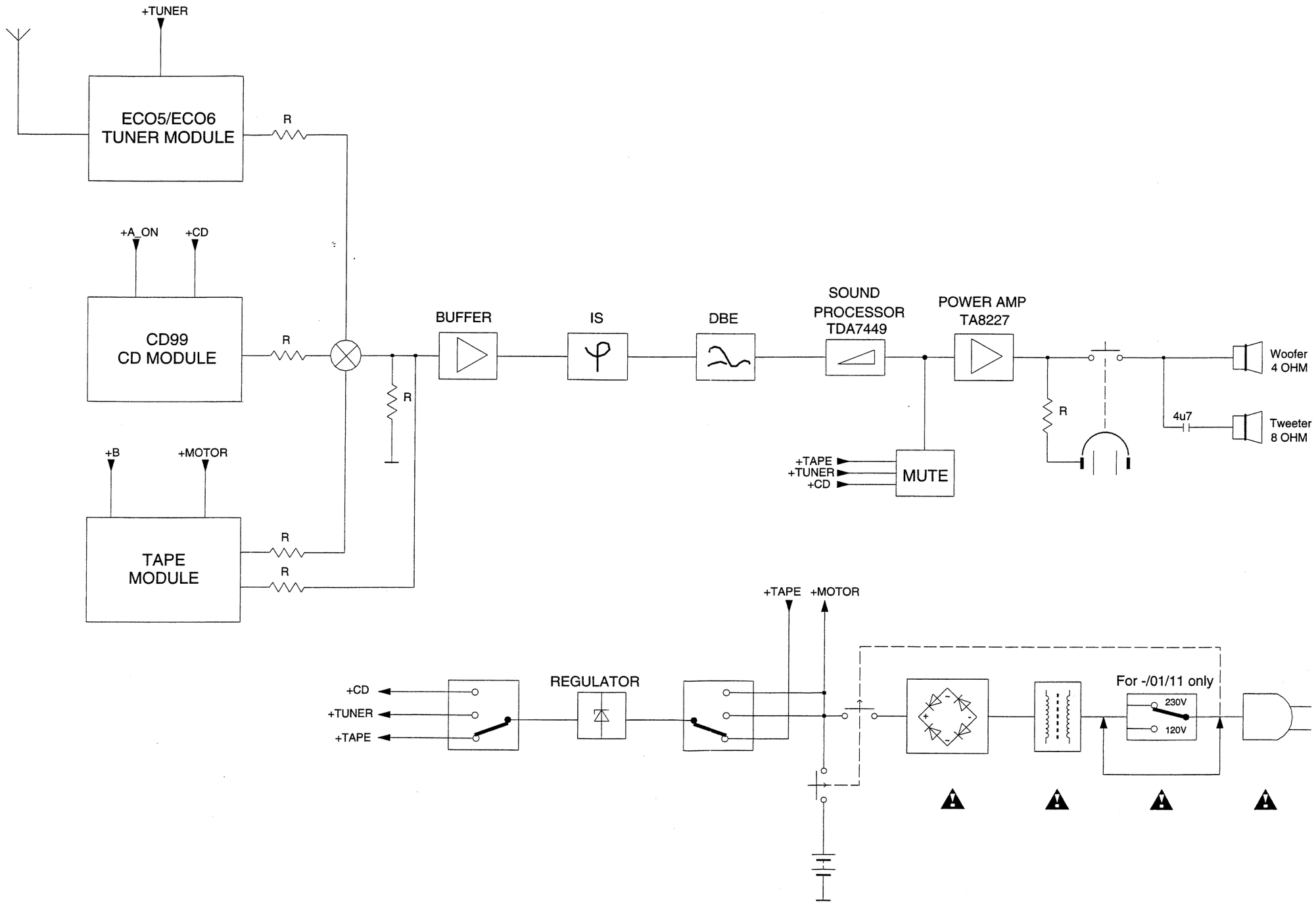
DISASSEMBLY DIAGRAM

A. To remove Front Cabinet Assembly
B. To remove Top Cabinet
C. To remove AF Board
D. To remove Tape Deck
E. To remove Control Board
F. To remove Keyboard
G. To remove Ornamental Plate
H. To remove CD Panel Front
I. To remove Handle



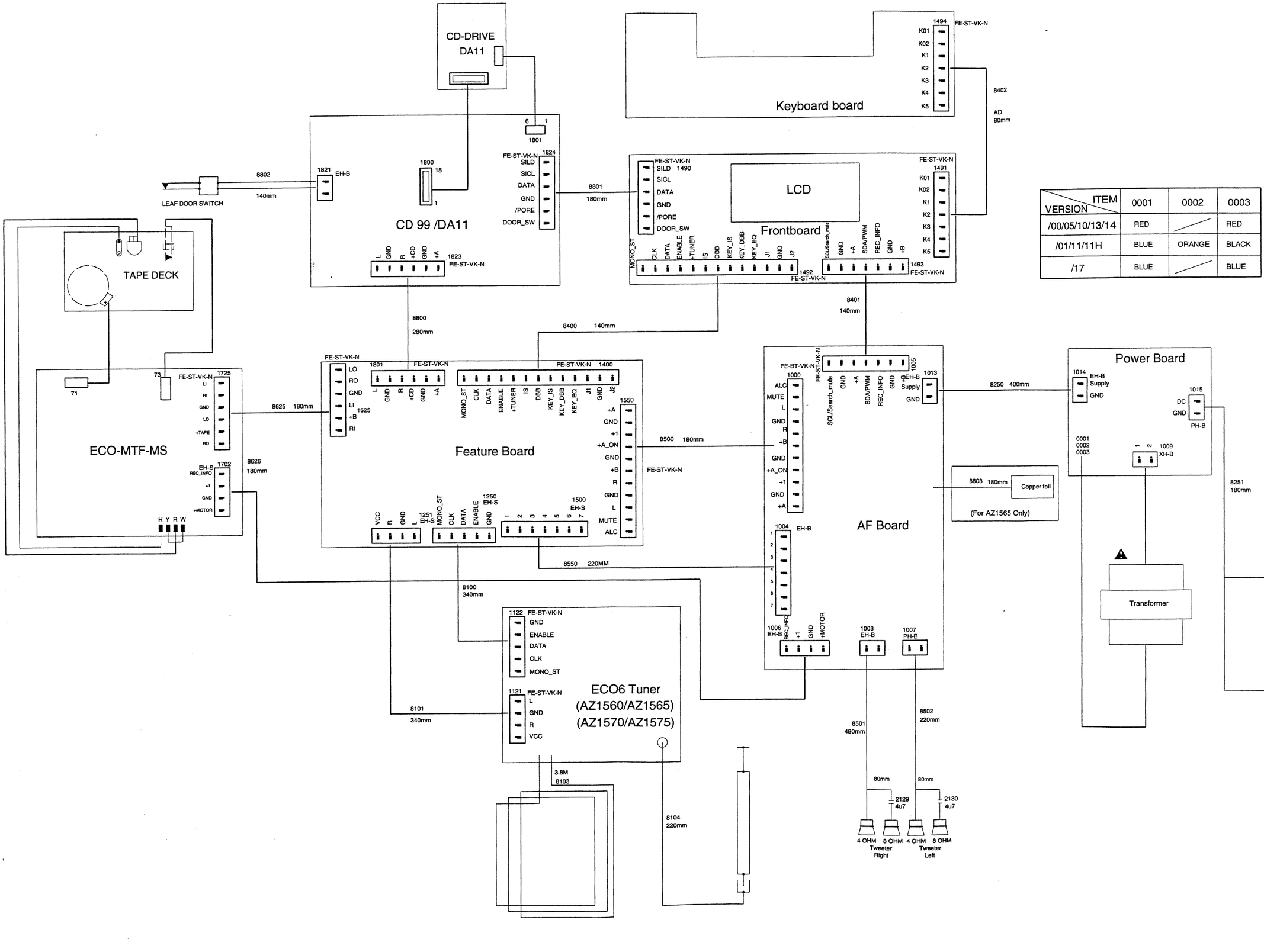
5-1

BLOCK DIAGRAM



6-1

WIRING DIAGRAM

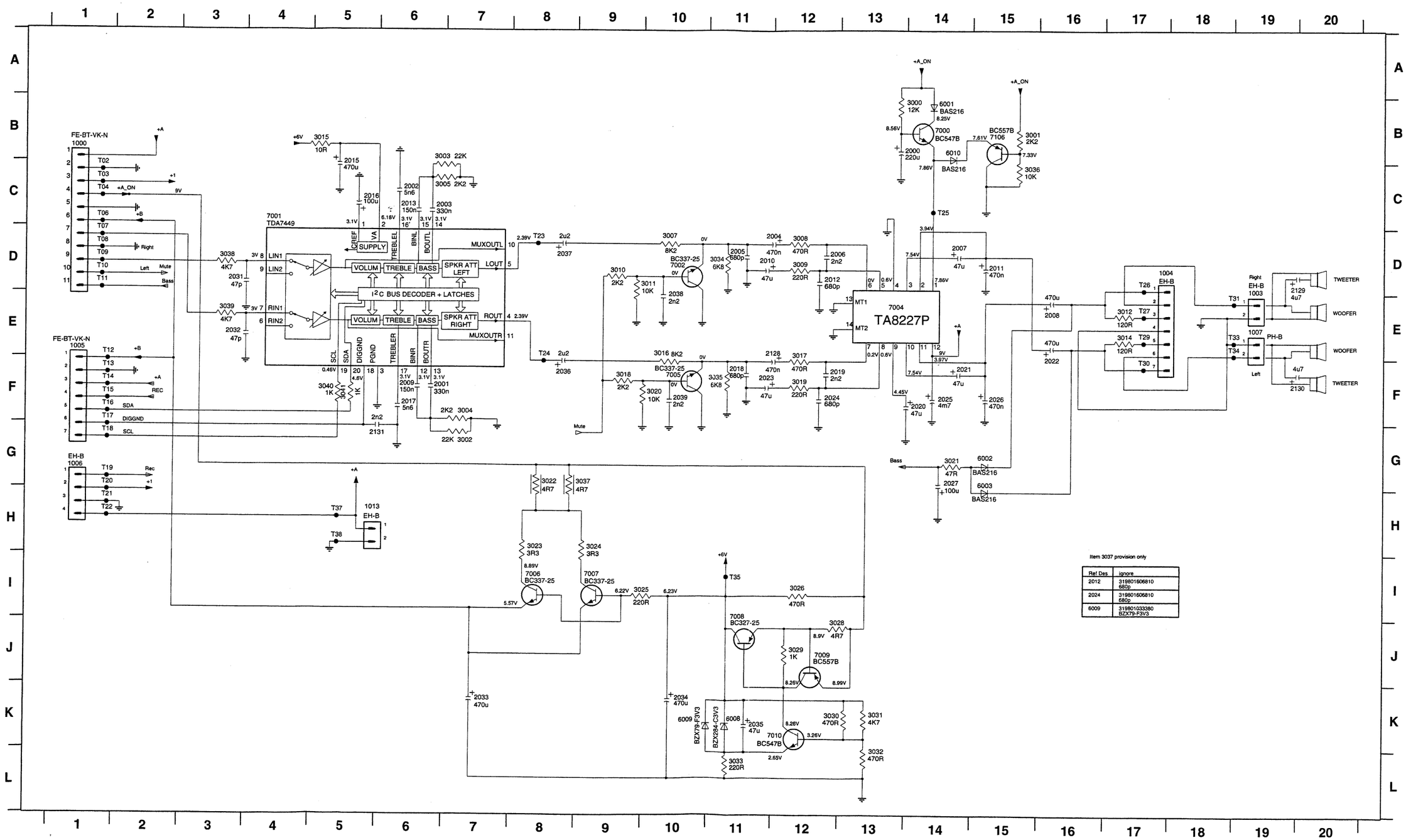


ITEM / VERSION	0001	0002	0003
/00/05/10/13/14	RED		RED
/01/11/11H	BLUE	ORANGE	BLACK
/17	BLUE		BLUE

AF BOARD - CIRCUIT DIAGRAM

7-1

T02 C1	T07 D1	T11 D1	T15 F1	T19 G1	T23 D8	T27 E17	T33 E19	T38 H5	1005 E1	2000 B14	2004 D11	2008 E16	2012 D12	2017 F6	2021 F14	2025 F14	2032 E3	2035 F8	2128 E11	3000 B14	3004 F7	3009 D12	3014 E17	3018 F9	3022 G8	3026 I12	3031 K13	3035 F11	3039 E3	6002 G15	6010 B14	7004 E13	7008 I11
T03 C1	T08 D1	T12 E1	T16 F1	T20 G1	T24 E8	T29 E17	T34 E19	1000 B1	1006 G1	2001 F6	2005 D11	2009 F6	2013 C6	2018 F11	2022 E16	2026 F15	2033 K7	2037 D8	2129 D19	3001 B15	3005 C6	3010 D9	3015 B5	3019 F12	3023 H8	3028 J12	3032 K13	3036 C15	3040 F5	6003 G15	7000 B14	7005 F10	7009 J12
T04 C1	T09 D1	T13 F1	T17 F1	T21 H1	T25 C14	T30 F17	T35 I11	1003 D19	1007 E19	2002 C6	2006 D12	2010 D11	2015 C5	2019 F12	2023 F11	2027 G14	2034 K10	2038 E10	2130 F19	3002 G7	3007 D10	3011 D10	3016 E10	3020 F10	3024 H9	3029 J12	3033 L11	3037 G9	3041 F5	6008 K11	7001 C4	7006 I8	7010 K12
T06 C1	T10 D1	T14 F1	T18 G1	T22 H1	T26 D17	T31 E19	T37 H5	1004 D17	1013 H6	2003 C6	2007 D14	2011 D15	2016 C5	2020 F14	2024 F12	2031 D3	2035 K11	2039 F10	2131 G5	3003 B6	3008 D12	3012 E17	3017 E12	3021 G14	3025 I10	3030 K12	3034 D11	3038 D3	6001 B14	6009 K10	7002 D10	7007 I9	7106 B15



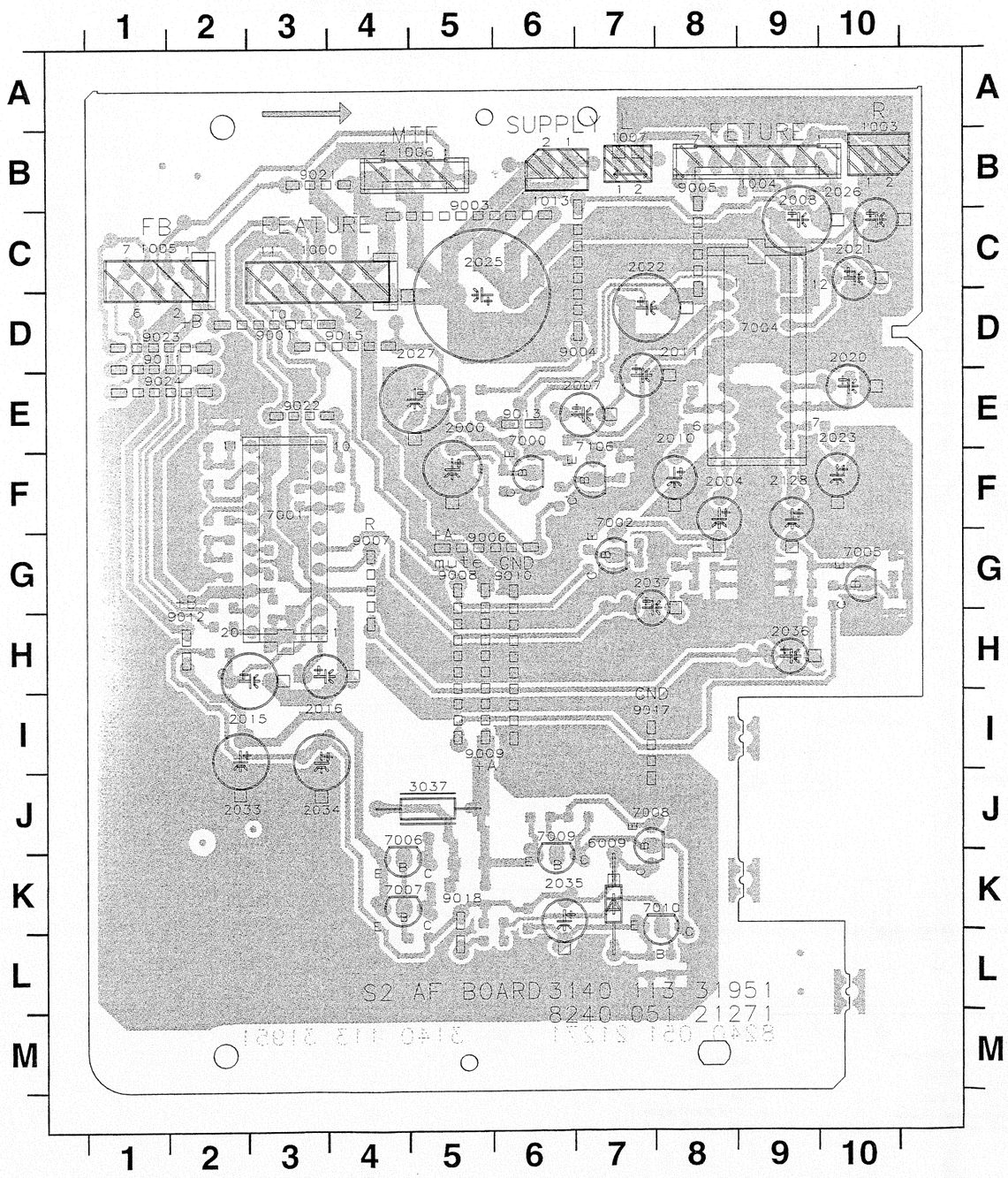
Item 3037 provision only

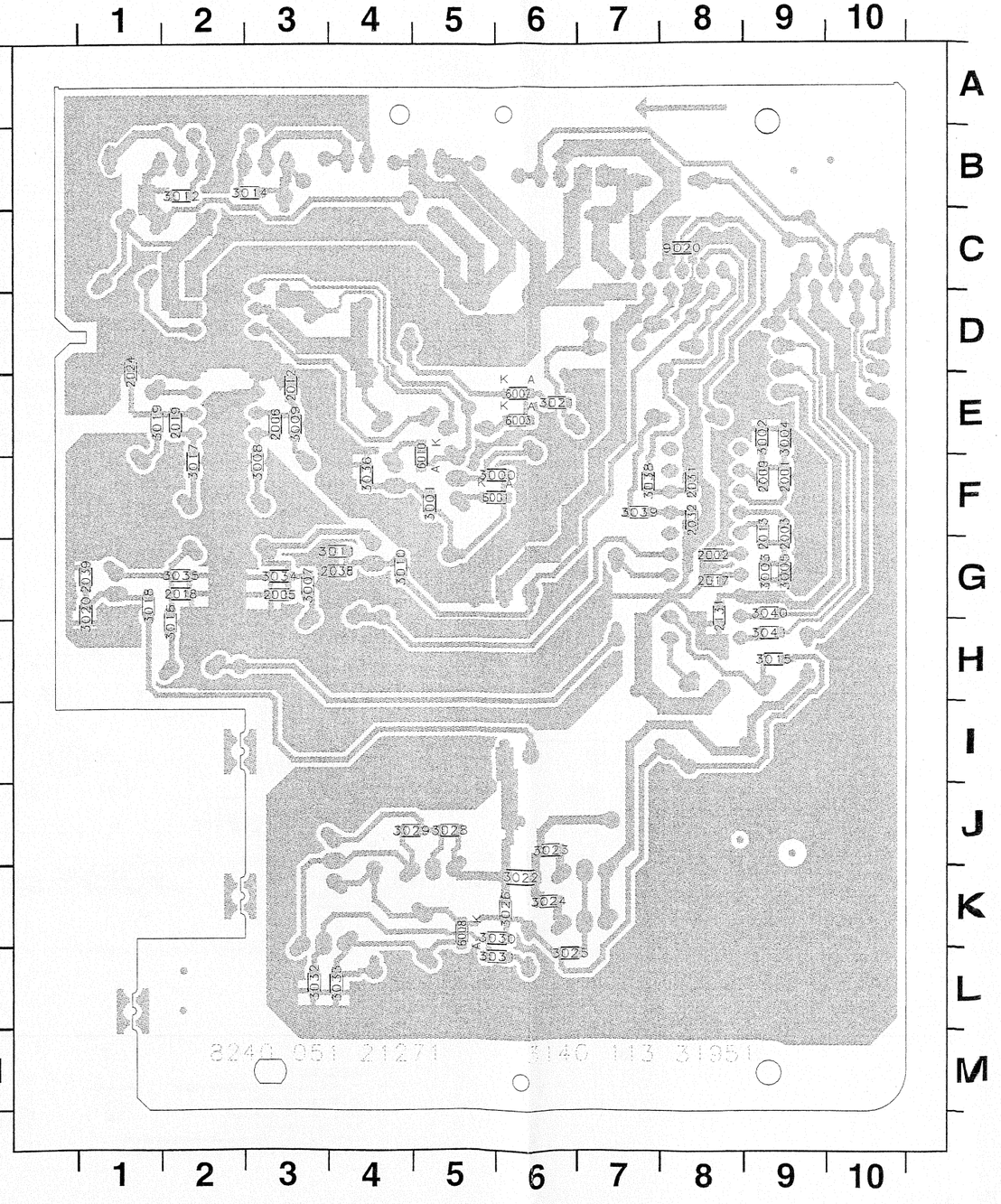
Ref Des	ignore
2012	3198016068l0 680p
2024	3198016068l0 680p
6009	3198010333B0 BZX79-F3V3

AF BOARD - LAYOUT DIAGRAM

1000	C3	2007	E7	2023	E10	2128	F9	7007	K4	9006	G5	9017	I7	2001	F9	2017	G8	2131	G8
1003	A10	2008	B9	2025	C5	3037	J5	7008	J7	9007	G4	9018	K5	2002	G8	2018	G2	3000	F6
1004	B9	2010	E8	2026	B10	6009	J7	7009	J6	9008	G5	9021	B3	2003	F9	2019	E2	3001	F5
1005	C1	2011	D8	2027	D5	7000	E6	7010	K8	9009	I5	9022	E3	2005	G3	2024	D1	3002	E9
1006	B5	2015	I2	2033	J2	7001	F3	7106	E7	9010	G6	9023	D1	2006	E3	2031	F8	3003	G9
1007	B7	2016	I3	2034	J3	7002	F7	9001	D3	9011	D1	9024	E1	2009	F9	2032	F8	3004	E9
1013	B6	2020	D10	2035	K6	7004	D9	9003	B5	9012	H2			2012	E3	2038	G4	3005	G9
2000	E5	2021	C10	2036	H9	7005	G10	9004	D7	9013	E6			2013	F9	2039	G1	3007	G3
2004	F8	2022	C7	2037	G7	7006	J4	9005	B8	9015	D4								

3008	F3	3017	F2	3025	L6	3034	G3	6002	E6										
3009	E3	3018	G1	3026	K6	3035	G2	6003	E6										
3010	G4	3019	E1	3028	J5	3036	F4	6008	K5										
3011	G4	3020	G1	3029	J4	3038	F7	6010	F5										
3012	B2	3021	E6	3030	K6	3039	F7	9020											
3014	B3	3022	K6	3031	L6	3040	G9												
3015	H9	3023	J6	3032	L3	3041	H9												
3016	H2	3024	K6	3033	L4	6001	F5												





05438 / DRUCK 7

8-1

TUNER BOARD ECO6 - CIRCUIT DIAGRAM

TUNER BOARD ECO6 / PORTABLE AUDIO

VERSION PROGRAMMING COMPONETS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	X				
/00 /02 FM/MW		X	X	X	X
/01 FM/MW		X	X	X	X
/14 FM-OIRT/MW		X	X	X	X
/17 FM/AM	X				

X component mounted

VERSION DETECTION

LEGEND

* ... only assembled in FM/AM-version
ⓟ ...for provision only
USA ... for USA version only
LW ... for LW version only
LW frame ... for LW version with frame aerial only
E_EU ... for East European version only

SMD jumper 41xx 0R

EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path
— FM
-·- AM
---- MPX (Audio Frequency)
⇒ AF - left/right

8-2

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check	1	1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	IC 7101 21 — shortcircuit to block AFC — 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz f=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3k to Vcc	C f=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 — 100nF — 220R	5111	5	max. — f_o symmetric
			IC 7101 40 — 100nF — 220R (see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B f = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	max. — f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

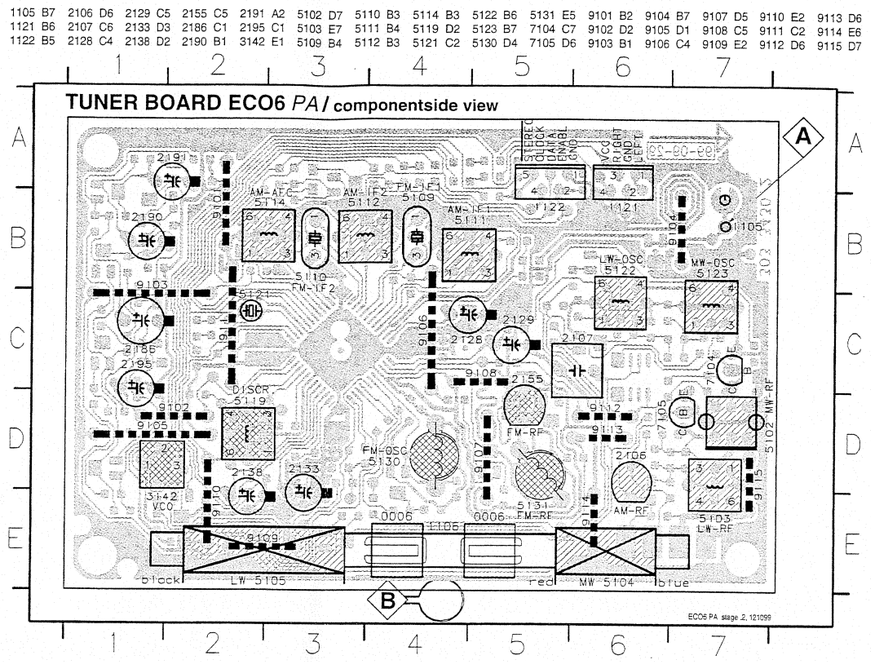
↕ Repeat

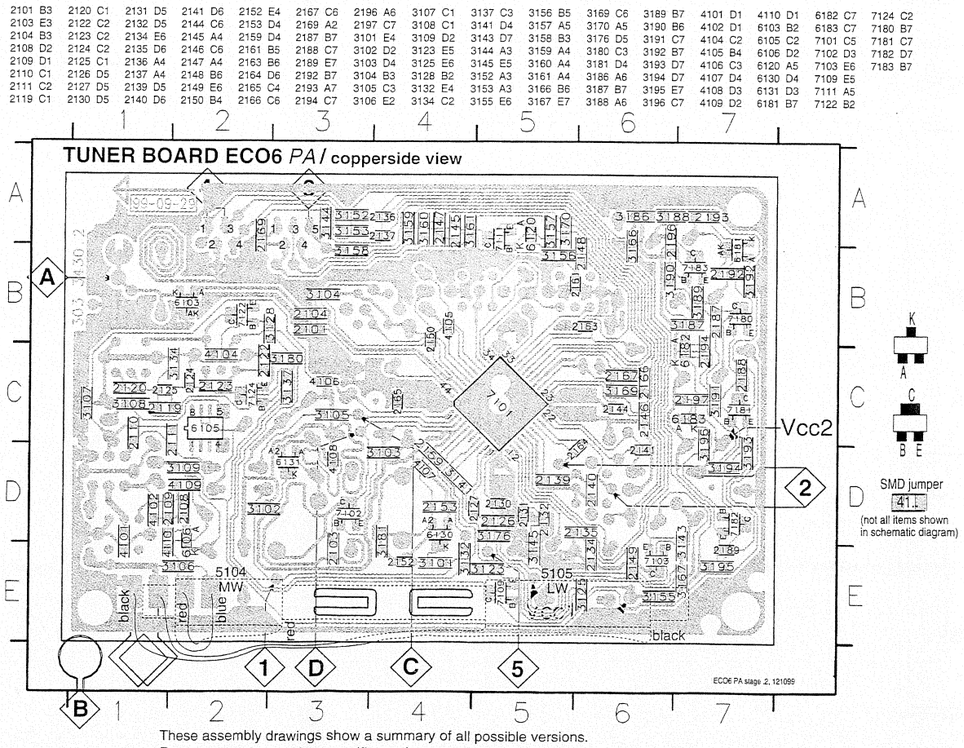
9113 D6
9114 E6
9115 D7

6182 C7 7124 C2
6183 C7 7180 B7
7101 C5 7181 C7
7102 D3 7182 D7
7103 E6 7183 B7
7109 E5
7111 A5
7122 B2

SMD jumper 41
(not all items shown in schematic diagram)

TUNER BOARD ECO6 - LAYOUT DIAGRAM [8-2]





These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial) [8-2]

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check	1	1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz f=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3k to Vcc	C f=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 220R 100nF	5111	5	max. f_o symmetric
			IC 7101 40 see remark [2] 220R 100nF	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B f = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

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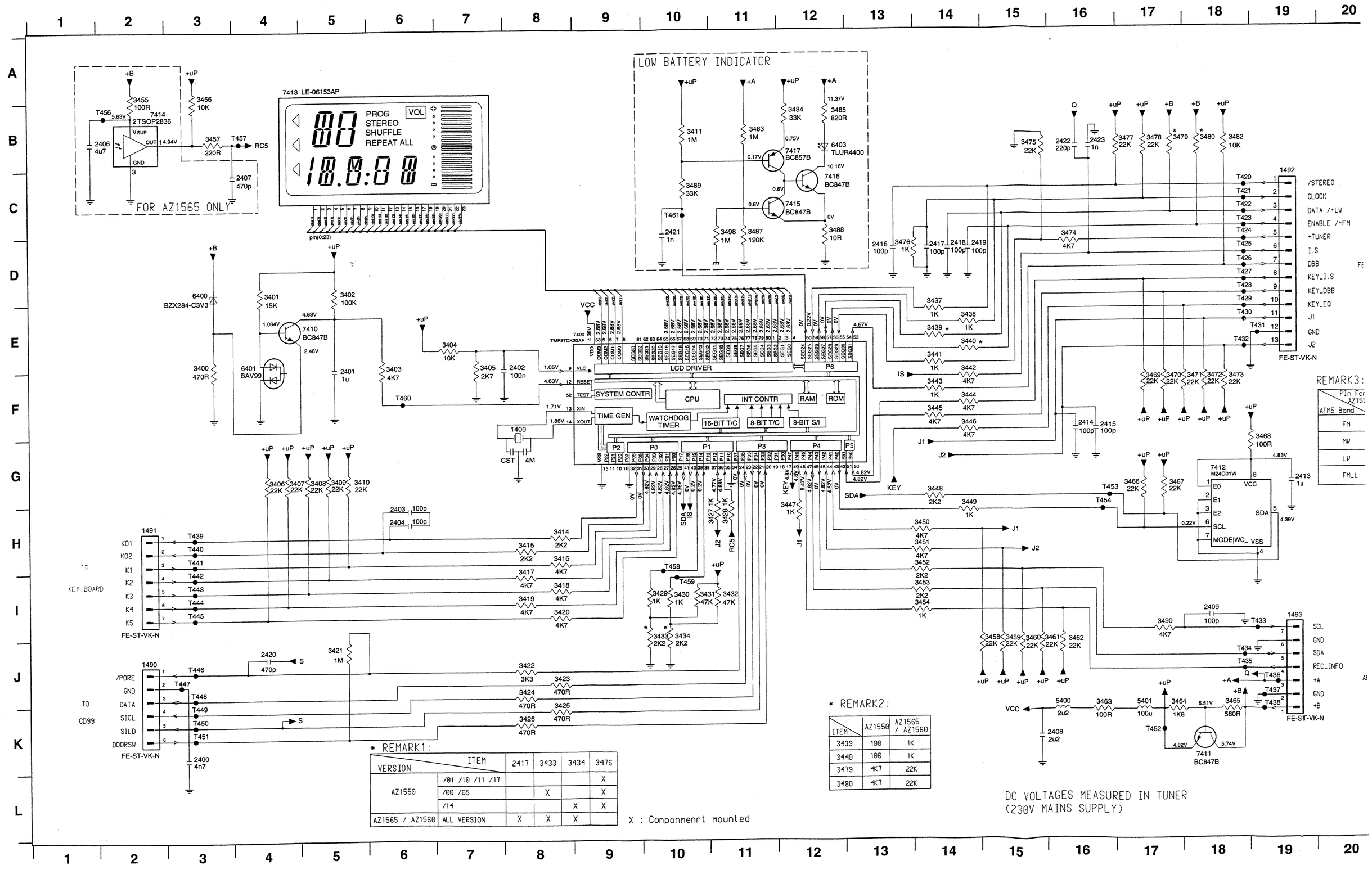
3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

Repeat

CONTROL BOARD - CIRCUIT DIAGRAM

9-1



* REMARK1:

VERSION \ ITEM		2417	3433	3434	3476
AZ1550	/01 /10 /11 /17				X
	/00 /05		X		X
	/14			X	X
AZ1565 / AZ1560	ALL VERSION	X	X	X	

X : Componmenrt mounted

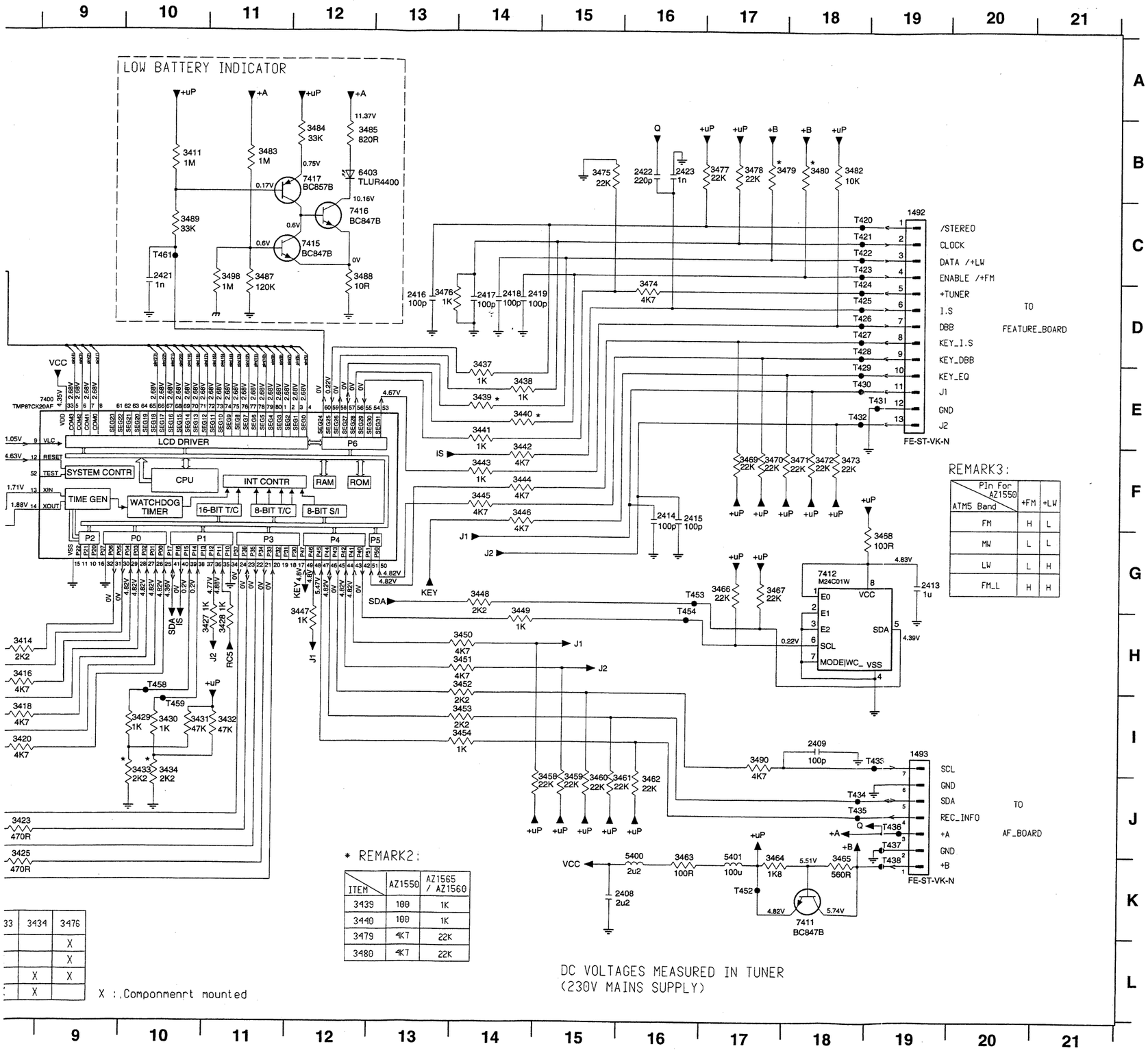
* REMARK2:

ITEM \	AZ1550	AZ1565 / AZ1560
3439	100	1K
3440	100	1K
3479	4K7	22K
3480	4K7	22K

* REMARK3:

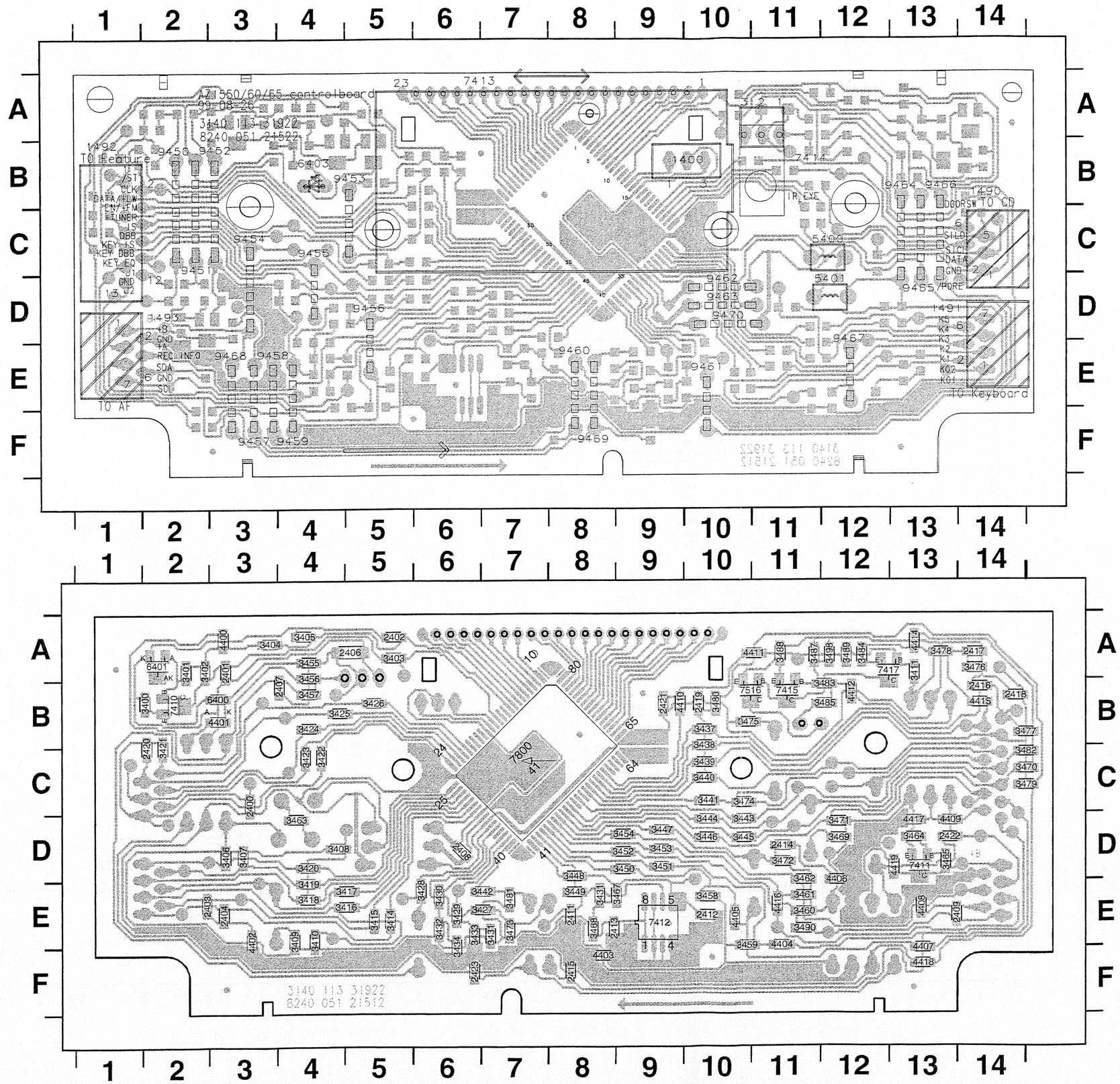
PIn For AZ15 \ ATM5 Band
FM
MW
LW
FM_L

9-1



1400 F8	3429 I10	3484 B12	T451 K3
1490 J2	3430 I10	3485 B12	T452 K17
1491 H2	3431 I10	3487 C11	T453 G16
1492 C19	3432 I11	3488 C12	T454 H16
1493 I19	3433 J10	3489 C10	T456 B2
2400 K3	3434 J10	3490 I17	T457 B4
2401 F5	3437 E14	3498 C11	T458 H10
2402 E8	3438 E14	5400 K16	T459 I10
2403 H6	3439 E14	5401 K17	T460 F6
2404 H6	3440 E14	6400 D3	T461 C10
2406 B2	3441 E14	6401 E4	
2407 C4	3442 F14	6403 B12	
2408 K16	3443 F14	7400 E9	
2409 I18	3444 F14	7410 E5	
2413 G19	3445 F14	7411 K18	
2414 F16	3446 F14	7412 G18	
2415 F16	3447 H12	7413 A4	
2416 D13	3448 G14	7414 B2	
2417 D14	3449 H14	7415 C12	
2418 D14	3450 H14	7416 C12	
2419 D14	3451 H14	7417 B12	
2420 J4	3452 H14	T420 C18	
2421 C10	3453 I14	T421 C18	
2422 B16	3454 I14	T422 C18	
2423 B16	3455 A2	T423 C18	
3400 E3	3456 A3	T424 D18	
3401 D4	3457 B3	T425 D18	
3402 D5	3458 J15	T426 D18	
3403 E6	3459 J15	T427 D18	
3404 E7	3460 J15	T428 D18	
3405 E7	3461 J16	T429 E18	
3406 G4	3462 J16	T430 E18	
3407 G4	3463 K16	T431 E19	
3408 G5	3464 K17	T432 E18	
3409 G5	3465 K18	T433 I19	
3410 G5	3466 G17	T434 J18	
3411 B10	3467 G17	T435 J18	
3414 H8	3468 G19	T436 J19	
3415 H8	3469 F17	T437 J19	
3416 H8	3470 F17	T438 K19	
3417 I8	3471 F18	T439 H3	
3418 I8	3472 F18	T440 H3	
3419 I8	3473 F18	T441 H3	
3420 I8	3474 D16	T442 I3	
3421 J5	3475 B15	T443 I3	
3422 J8	3476 D13	T444 I3	
3423 J8	3477 B17	T445 I3	
3424 J8	3478 B17	T446 J3	
3425 K8	3479 B17	T447 J3	
3426 K8	3480 B18	T448 J3	
3427 H11	3482 B18	T449 K3	
3428 H11	3483 B11	T450 K3	

CONTROL BOARD - LAYOUT DIAGRAM



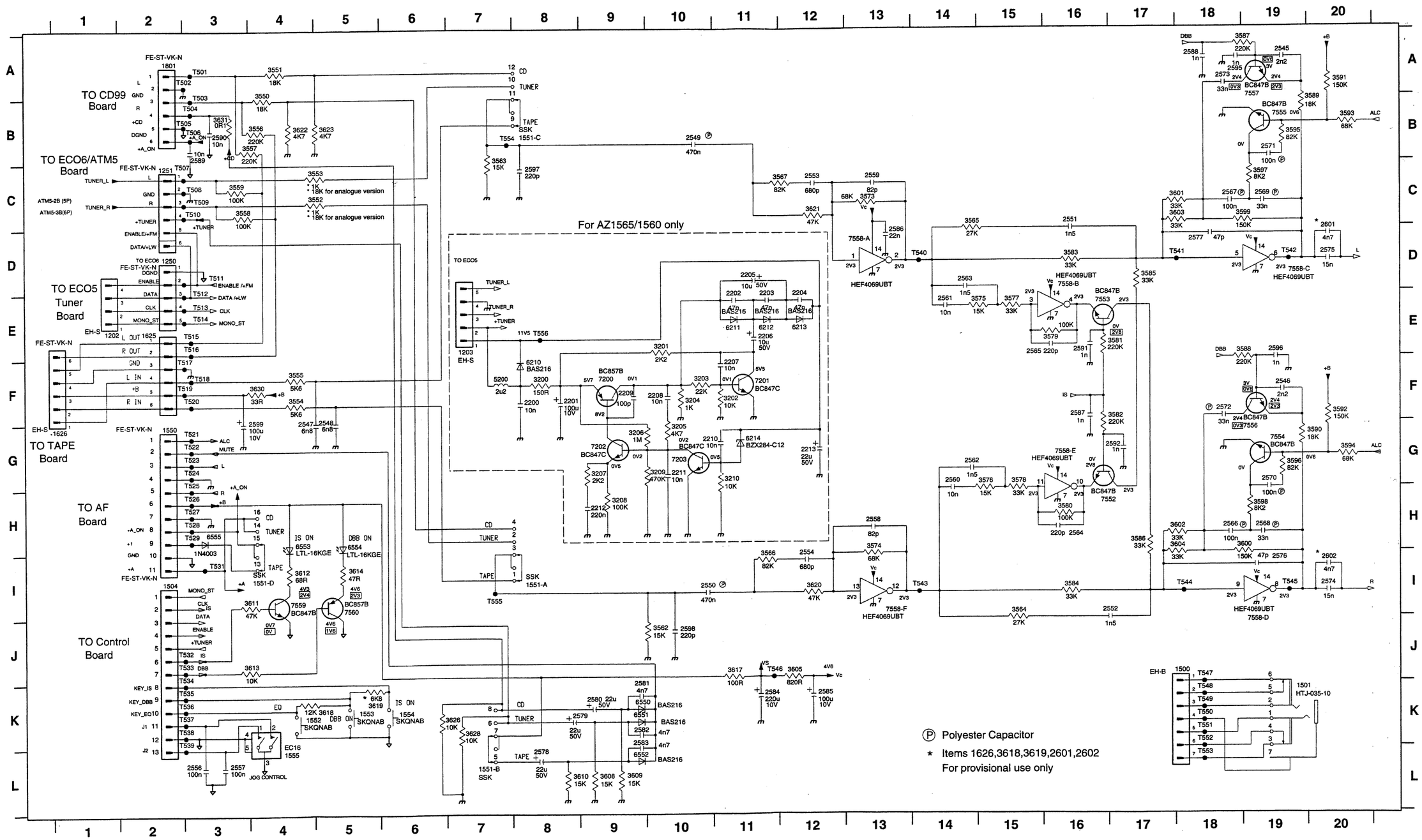
1490 B14
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1492 B1
1493 D2
6403 B4
7413 A6
7414 B11
9450 B2
9451 C2
9452 B3
9453 B5
9454 C3
9455 C4
9456 D5
9457 F3
9458 E3
9459 F4
9460 E8
9461 E10
9462 D10
9463 D10
9464 B13
9465 D13
9466 B13
9467 D12
9468 E3
9469 F8
9470 D10

2400 C12
2401 A13
2402 A10
2403 E13
2404 E13
2406 A11
2407 B12
2408 D9
2409 E2
2411 E8
2412 E6
2413 E7
2414 D4
2415 F8
2416 B2
2417 A2
2418 B1
2419 B6
2420 C14
2421 B6
2422 D2
2423 F9
3400 B14
3401 A13
3402 A13
3403 A10
3404 A12
3405 A12
3406 D13
3407 D12
3408 D11
3409 E12
3410 E11
3411 A3
3414 E10
3415 E10
3416 E11
3417 E11
3418 E11
3419 E11
3420 D11
3421 C14
3422 C11
3423 C11
3424 B11
3425 B11
3426 B10
3427 E9
3428 E10
3429 E9
3430 E10
3431 E9
3432 E10
3433 E9
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3440 C6
3441 C6
3442 E9
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3447 D6
3448 D8
3449 E8
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3452 D7
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3454 D7
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3456 A11
3457 B11
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3463 D12
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3465 D2
3466 E7
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3469 D4
3470 C1
3471 D4
3472 D4
3473 E8
3474 C5
3475 B5
3476 A2
3477 B1
3478 A2
3479 C1
3480 B5
3481 E8
3482 C1
3483 B4
3484 A3
3485 B4
3487 A4
3488 A4
3489 A4
3490 E4
3498 A4
4400 A13
4401 B13
4402 E12
4403 F7
4404 E4
4405 E5
4406 E4
4407 F2
4408 E2
4409 D2
4410 B6
4411 A5
4412 B3
4414 A3
4415 B2
4416 E5
4417 D3
4418 F2
4419 D3
6400 B13
6401 A14
7400 C8
7410 B13
7411 D2
7412 E6
7415 B4
7416 B5
7417 A3

10-1

FEATURE BOARD - CIRCUIT DIAGRAM

1202 E2	1551-B L7	1801 A2	2208 F10	2548 F5	2558 H13	2567 C18	2576 I19	2585 K12	2596 E19	3203 F10	3551 A4	3562 J10	3576 G15	3585 D17	3594 G20	3603 C18	3614 I5	3628 K7	6550 K9	7203 G10	7558-C D19	T504 B3	T513 E3	T522 G3	T532 J3	T541 D18	T550 K18
1203 E7	1551-C B8	2200 F8	2209 F9	2549 B10	2559 C13	2568 H19	2577 D18	2586 D13	2597 C8	3204 F10	3552 C5	3563 B7	3577 E15	3586 H17	3595 B19	3604 H18	3617 J11	3630 F4	6551 K9	7552 H17	7558-D J19	T505 B3	T514 E3	T523 G3	T533 J3	T542 D19	T551 K18
1250 D2	1551-D I4	2201 F8	2210 G10	2550 I10	2560 G14	2569 C19	2578 L8	2587 F16	2598 J10	3205 G10	3553 C5	3564 I15	3578 G15	3587 A19	3596 G19	3605 J12	3618 K5	3631 B3	6552 L9	7553 E16	7558-E G16	T506 B3	T515 E3	T524 G3	T534 J3	T543 I14	T552 K18
1251 C2	1552 K4	2202 E11	2211 G10	2551 C16	2561 E14	2570 G19	2579 K8	2588 A18	2599 F4	3206 G9	3554 F4	3565 C14	3579 E16	3588 E19	3597 C19	3608 L9	3619 K5	5200 F7	6553 H4	7554 G19	7558-F I13	T507 C2	T516 E3	T525 G3	T535 K3	T544 I18	T553 L18
1500 J18	1553 K5	2203 E11	2212 H9	2552 I17	2562 G14	2571 B19	2580 K9	2589 B3	2601 D20	3207 G9	3555 F4	3566 I11	3580 H16	3589 B20	3598 H19	3609 L9	3620 I12	6210 F8	6554 H5	7555 B19	7559 I4	T508 C3	T517 F3	T526 H3	T536 K3	T545 I19	T554 B7
1501 K19	1554 K6	2204 E12	2213 G12	2553 C12	2563 D14	2572 F18	2581 K9	2590 B3	2602 I20	3208 H9	3556 B4	3567 C12	3581 E17	3590 G20	3599 C19	3610 L9	3621 C12	6211 E11	6555 H3	7556 G19	7560 I5	T509 C3	T518 F3	T527 H3	T537 K3	T546 J11	T555 I7
1504 I2	1555 L4	2205 D11	2545 A19	2554 I12	2564 H16	2573 A18	2582 K9	2591 E16	3200 F8	3209 G10	3557 B4	3573 C13	3582 F17	3591 A20	3600 H19	3611 I4	3622 B4	6212 E11	7200 F9	7557 A19	T501 A3	T510 C3	T519 F3	T528 H3	T538 K3	T547 J18	T556 E8
1550 G2	1625 E2	2206 E11	2546 F19	2556 L3	2565 E15	2574 I20	2583 K9	2592 G17	3201 E10	3210 G11	3558 C3	3574 H13	3583 D16	3592 F20	3601 C18	3612 I4	3623 B5	6213 E12	7201 F11	7558-A D13	T502 A3	T511 D3	T520 F3	T529 H3	T539 K3	T548 K18	
1551-A I8	1626 G1	2207 F11	2547 G4	2557 L3	2566 H18	2575 D20	2584 K11	2595 A18	3202 F11	3550 A4	3559 C3	3575 E15	3584 I16	3593 B20	3602 H18	3613 J4	3626 K7	6214 G11	7202 G9	7558-B D16	T503 A3	T512 D3	T521 G3	T531 I3	T540 D14	T549 K18	

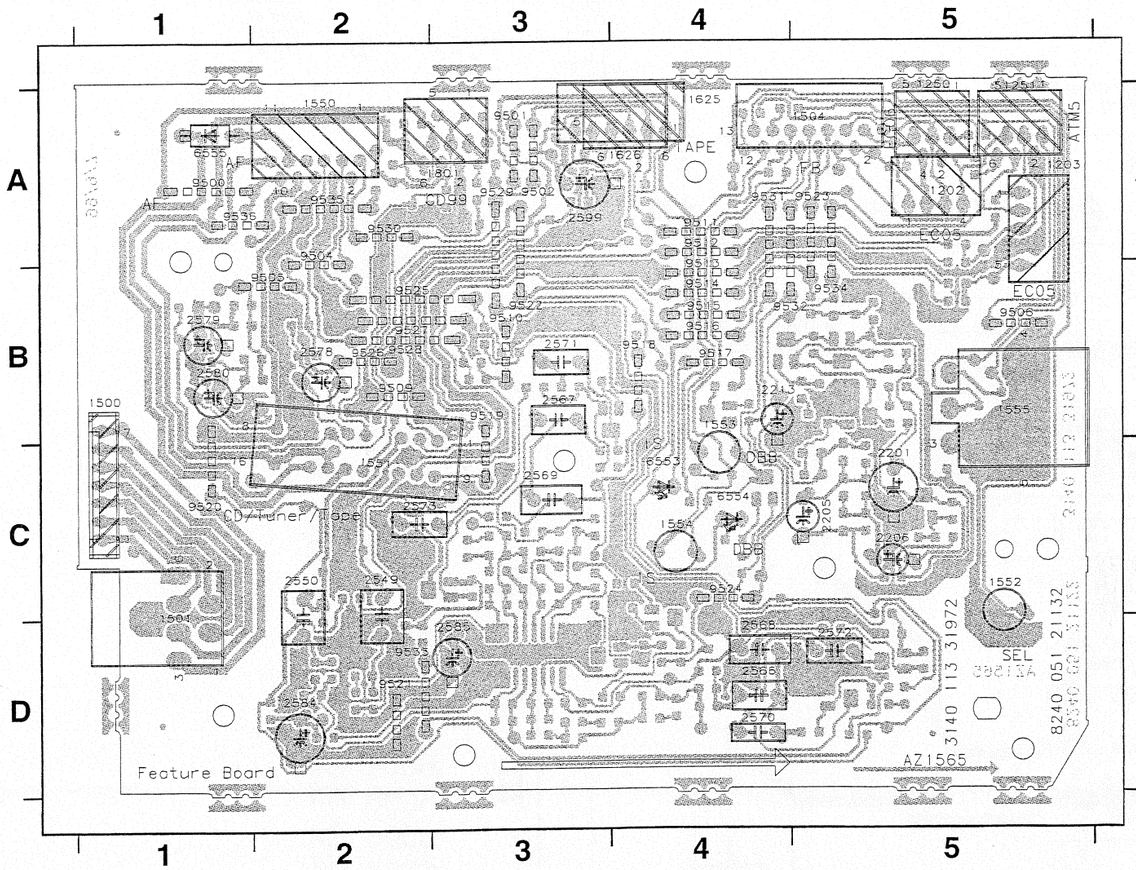


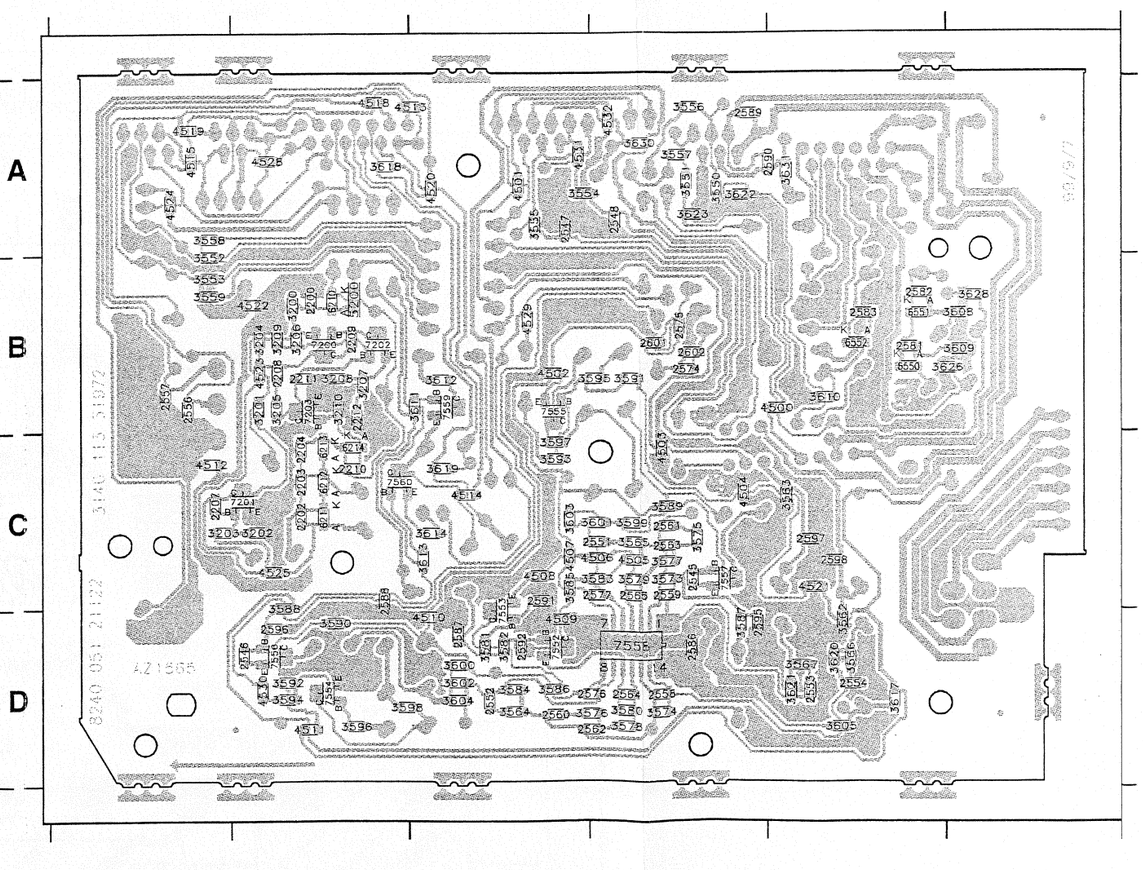
FEATURE BOARD - LAYOUT DIAGRAM

10-2

1202 A5 1552 C5 2206 C5 2571 B3 6553 C4 9509 B2 9518 B4 9527 B2 9536 A1
1203 A5 1553 B4 2213 B4 2572 D5 6554 C4 9510 B3 9519 B3 9528 B2
1250 A5 1554 C4 2549 C2 2573 C2 6555 A1 9511 A4 9520 C1 9529 A3
1251 A5 1555 B5 2550 C2 2578 B2 9500 A1 9512 A4 9521 D2 9530 A2
1500 B1 1625 A4 2566 D4 2579 B1 9501 A3 9513 B4 9522 B3 9531 A4
1501 C1 1626 A4 2567 B3 2580 B1 9502 A3 9514 B4 9523 A5 9532 B4
1504 A5 1801 A3 2568 D4 2584 D2 9504 A2 9515 B4 9524 C4 9533 D2
1550 A2 2201 C5 2569 C3 2585 D3 9505 B2 9516 B4 9525 B2 9534 B5
1551 C2 2205 C5 2570 D4 2599 A3 9506 B5 9517 B4 9526 B2 9535 A2

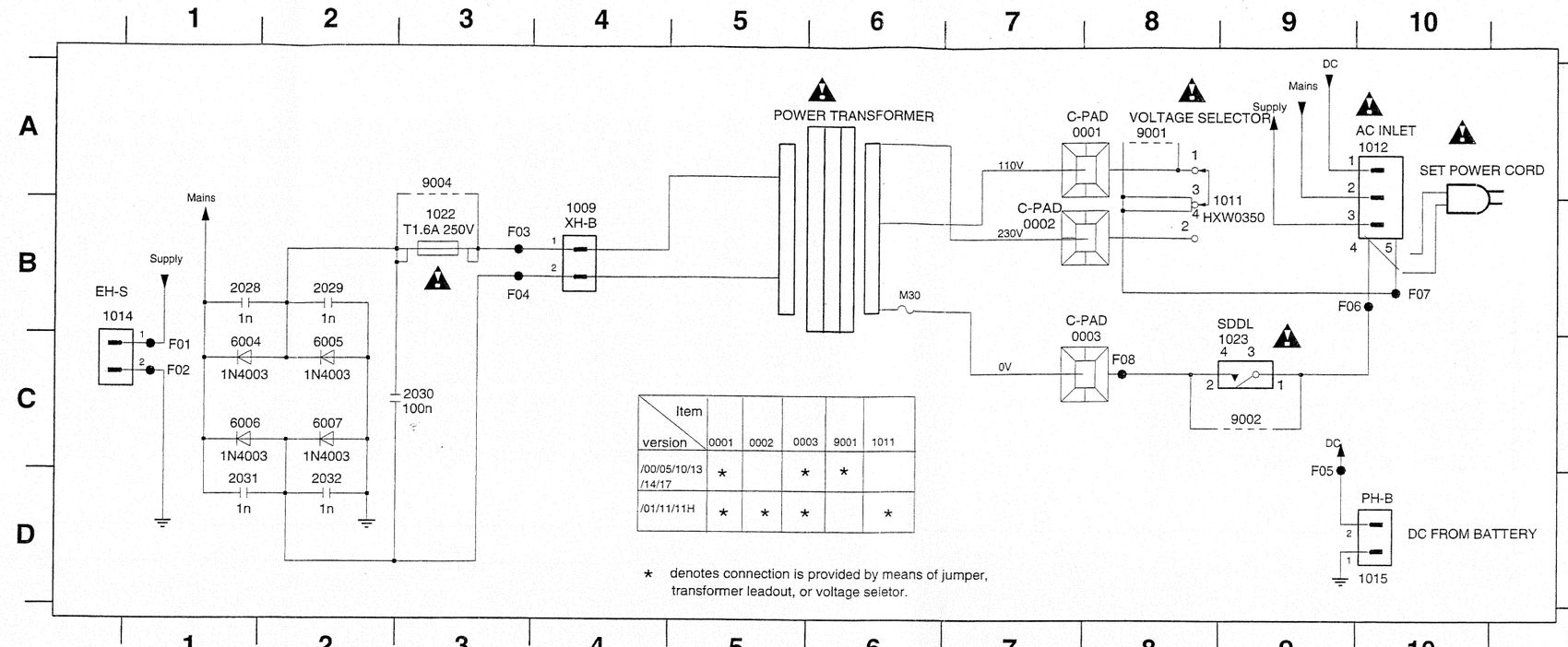
2200 B2 2556 B1 2587 D3 3206 B2 3565 C4 3588 C2 3608 B6 4500 B5 4520 A3 6551 B5
2202 C2 2557 B1 2588 C2 3207 B2 3566 D5 3589 C4 3609 B6 4501 A3 4521 C5 6552 B5
2203 C2 2558 D4 2589 A4 3208 B2 3567 D5 3590 D2 3610 B5 4502 B3 4522 B2 7200 B2
2204 C2 2559 C4 2590 A5 3209 B2 3573 C4 3591 B4 3611 B3 4503 C4 4523 B2 7201 C2
2207 C1 2560 D3 2591 C3 3210 B2 3574 D4 3592 D2 3612 B3 4504 C4 4524 A1 7202 B2
2208 B2 2561 C4 2592 D3 3550 A4 3575 C4 3593 C3 3613 C3 4505 C4 4525 C2 7203 B2
2209 B2 2562 D4 2595 D4 3551 A4 3576 D4 3594 D2 3614 C3 4506 C4 4528 A2 7552 D3
2210 C2 2563 C4 2596 D2 3552 B1 3577 C4 3595 B4 3617 D5 4507 C3 4529 B3 7553 D3
2211 B2 2564 D4 2597 C5 3553 B1 3578 D4 3596 D2 3618 A2 4508 C3 4530 D2 7554 D2
2212 B2 2565 C4 2598 C5 3554 A3 3579 C4 3597 C3 3619 C3 4509 D3 4531 A3 7555 B3
2545 C4 2574 B4 2601 B4 3555 A3 3580 D4 3598 D2 3620 D5 4510 D3 4532 A4 7556 D2
2546 D2 2575 B4 2602 B4 3556 A4 3581 D3 3599 C4 3621 D5 4511 D2 5200 B2 7557 C4
2547 A3 2576 D4 3200 B2 3557 A4 3582 D3 3600 D3 3622 A4 4512 C1 6210 B2 7558 D4
2548 A4 2577 C4 3201 B2 3558 A1 3583 C4 3601 C4 3623 A4 4513 A3 6211 C2 7559 B3
2551 C4 2581 B5 3202 C2 3559 B1 3584 D3 3602 D3 3626 B6 4514 C3 6212 C2 7560 C2
2552 D3 2582 B5 3203 C1 3562 D5 3585 C3 3603 C3 3628 B6 4515 A1 6213 C2
2553 D5 2583 B5 3204 B2 3563 C5 3586 D3 3604 D3 3630 A4 4518 A2 6214 C2
2554 D5 2586 D4 3205 B2 3564 D3 3587 D4 3605 D5 3631 A5 4519 A1 6550 B5





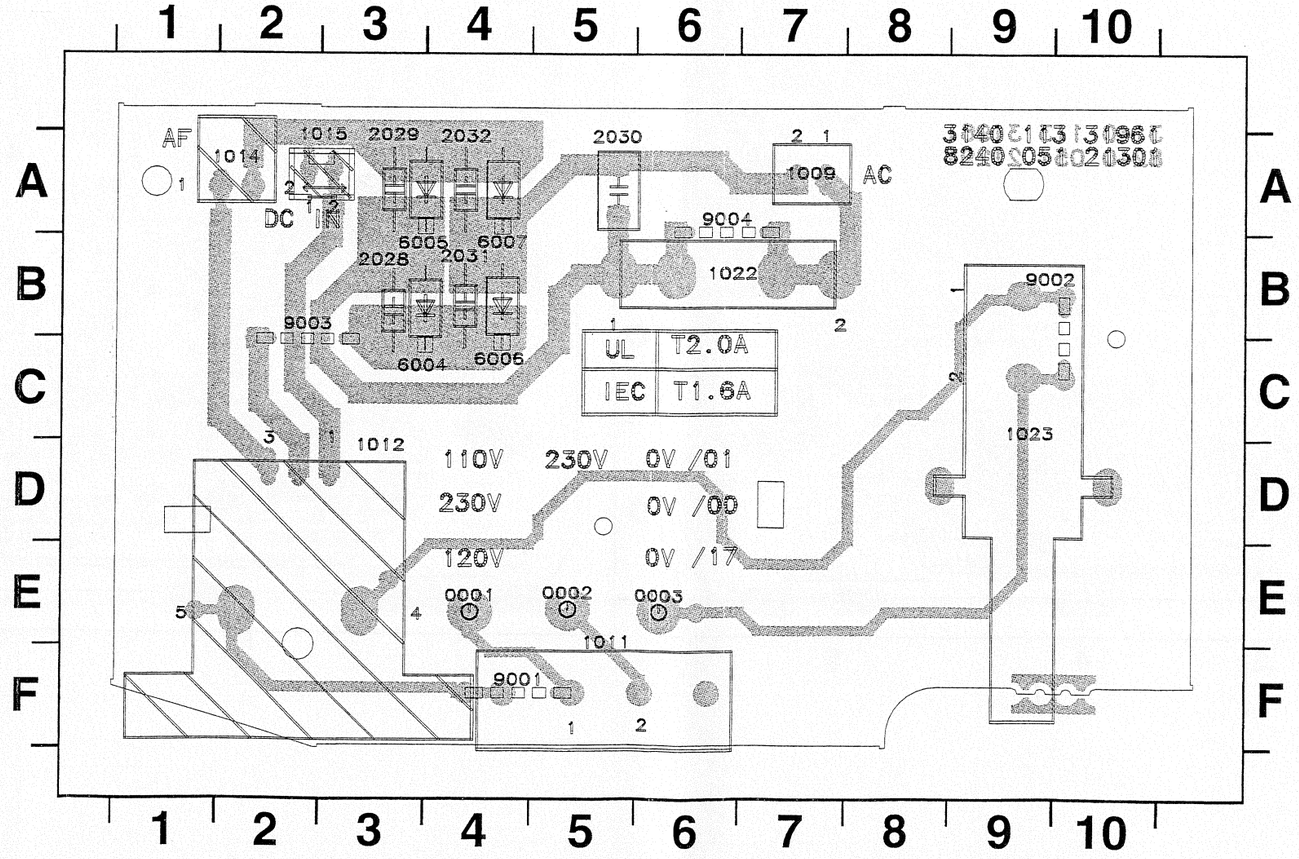
POWER BOARD - CIRCUIT & LAYOUT DIAGRAM

11-1



Item / version	0001	0002	0003	9001	1011
/00/05/10/13 /14/17	*		*	*	
/01/11/11H	*	*	*		*

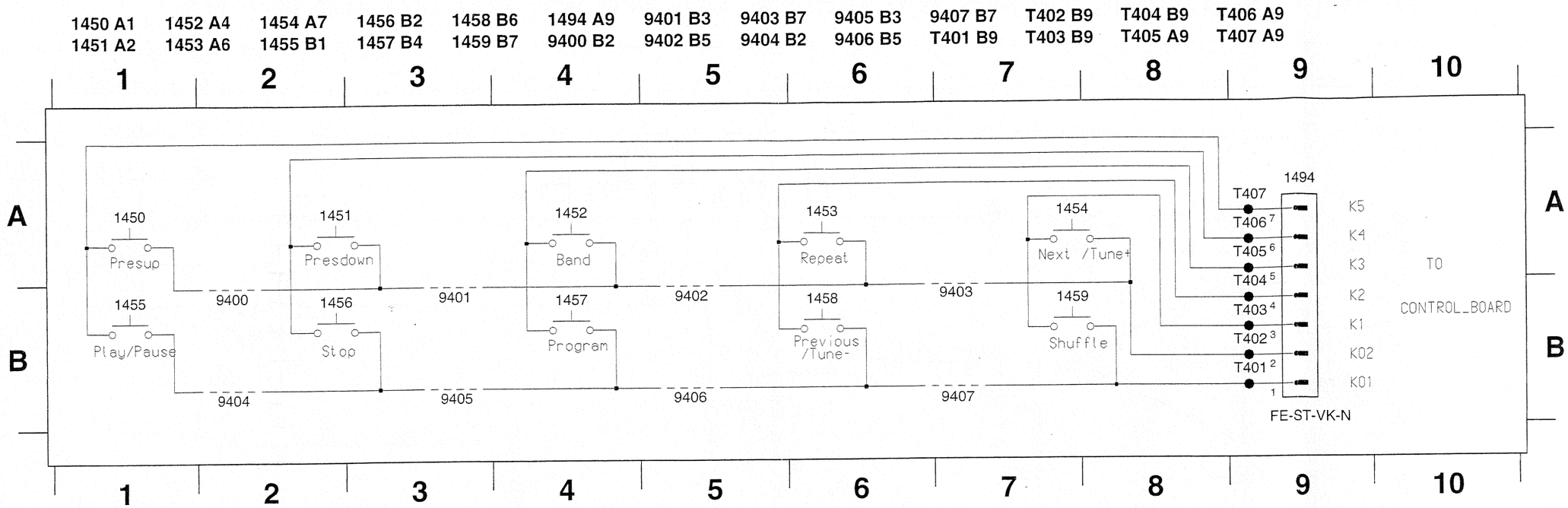
F01 C1
F02 C1
F03 B3
F04 B3
F05 D9
F06 B9
F07 B10
F08 C8
0001 A7
0002 B7
0003 C7
1009 B4
1011 A9
1012 A10
1014 B1
1015 D10
1022 B3
1023 B9
2028 B1
2029 B2
2030 C3
2031 D1
2032 D2
6004 C1
6005 C2
6006 C1
6007 C2
9001 A8
9002 C9
9004 A3



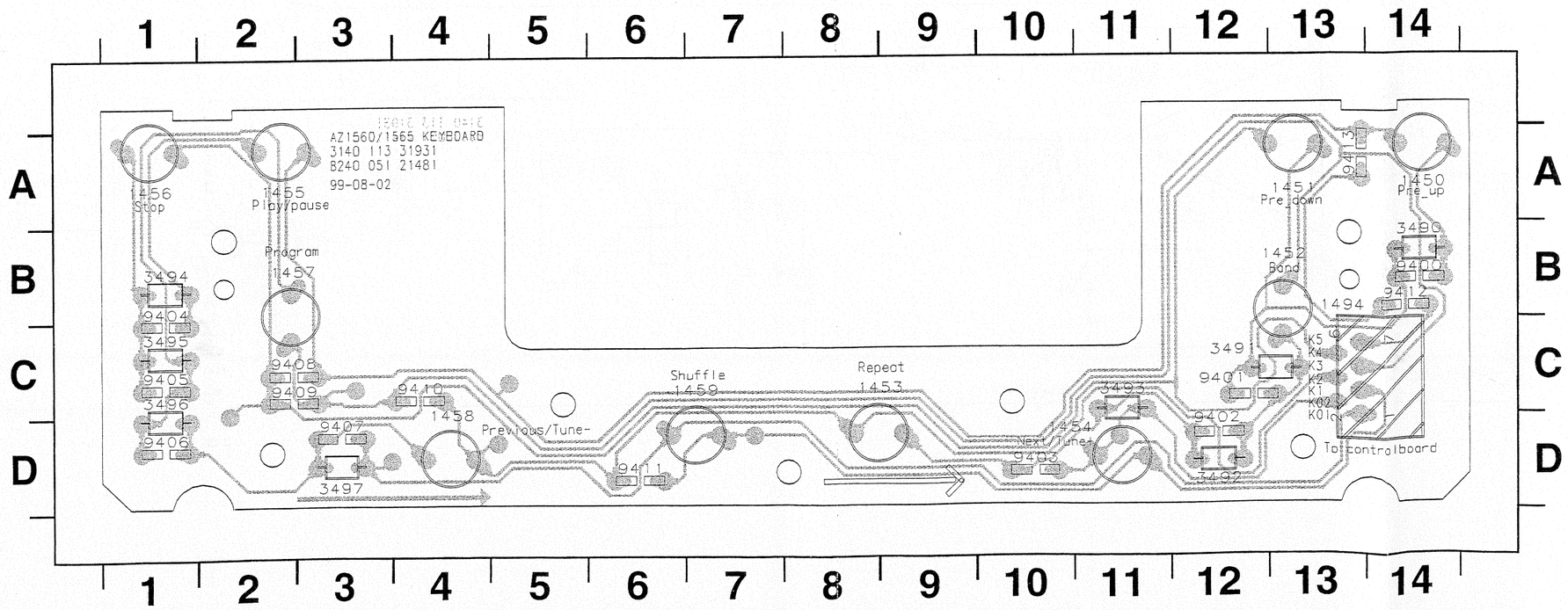
0001 E4
0002 E5
0003 E6
1009 A7
1011 E5
1012 D3
1014 A2
1015 A3
1022 B6
1023 C9
2028 B3
2029 A3
2030 A5
2031 B4
2032 A4
6004 C3
6005 B3
6006 C4
6007 B4
9001 F4
9002 B9
9003 B2
9004 A6

KEYBOARD - CIRCUIT & LAYOUT DIAGRAM

12-1



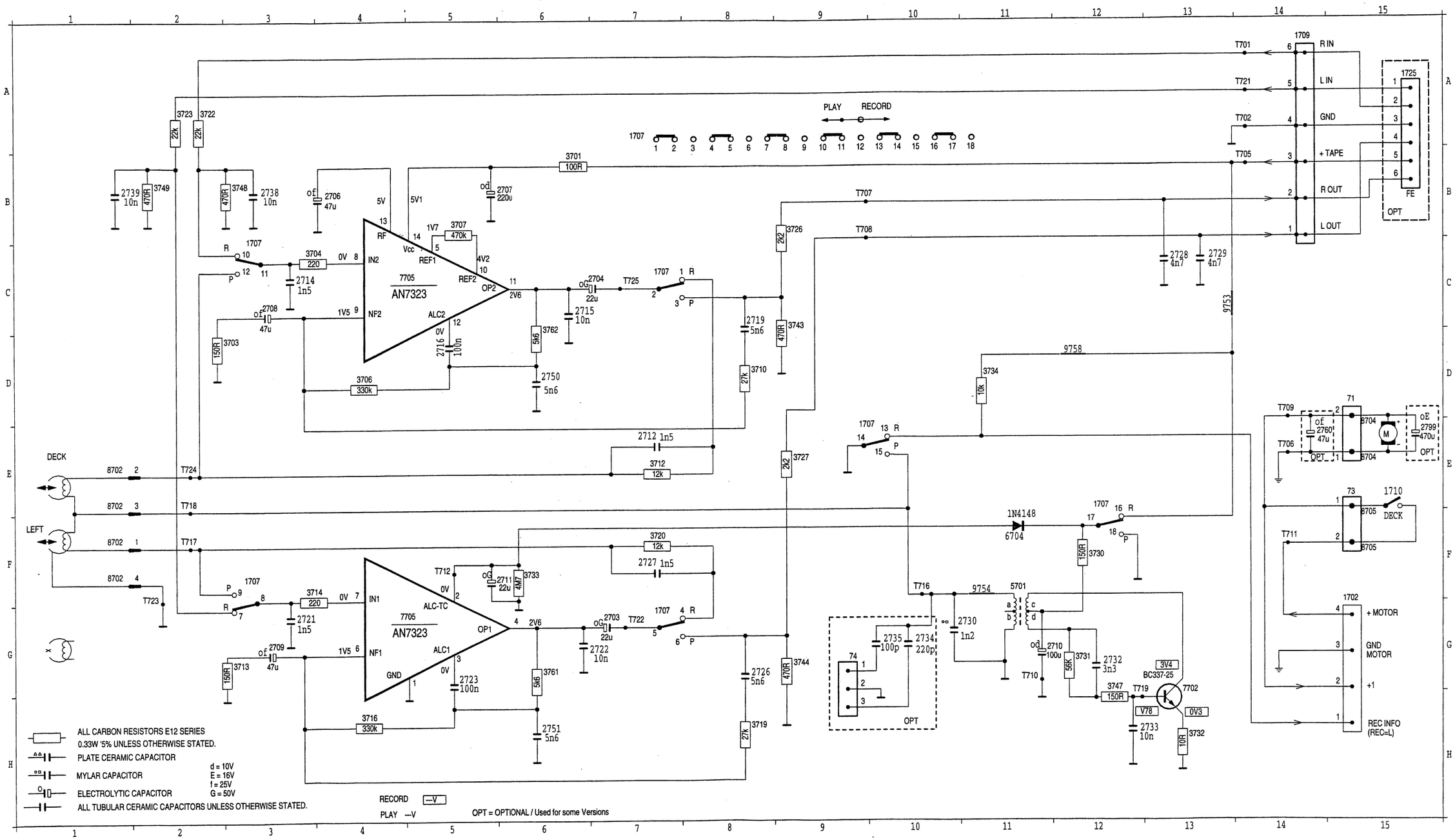
1450	A14	1453	C8	1456	A1	1459	C7	3491	C12	3494	B1	3497	D3	9402	D12	9405	C1	9408	C2	9411	D6
1451	A13	1454	D10	1457	B2	1494	B13	3492	D12	3495	C1	9400	B14	9403	D10	9406	D1	9409	C2	9412	B14
1452	B13	1455	A2	1458	C4	3490	B14	3493	C11	3496	C1	9401	C12	9404	B1	9407	D3	9410	C4	9413	A13



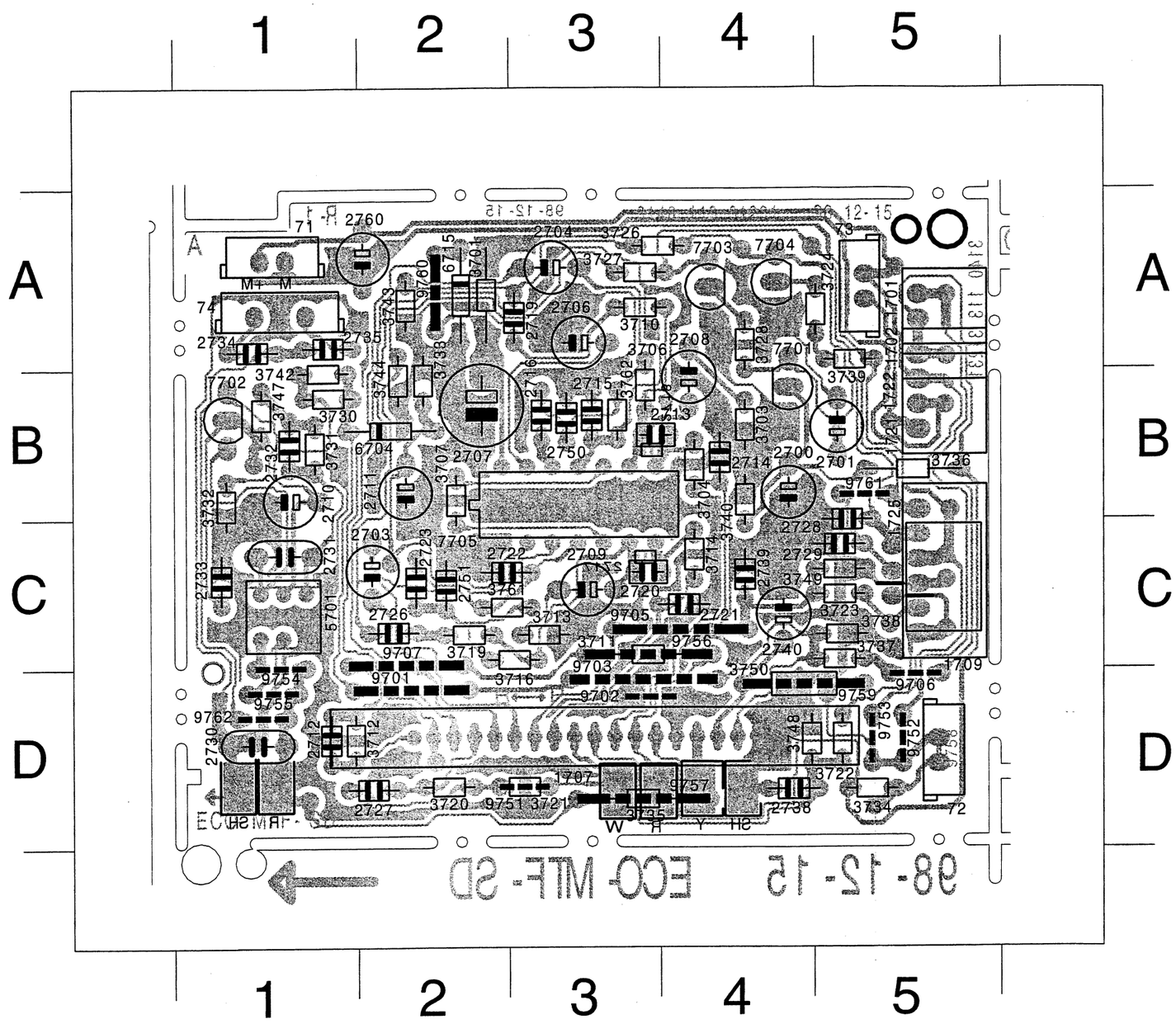
13-1

RECORDER BOARD - CIRCUIT DIAGRAM

71	D15	1707	C 3	1709	A14	2706	B 4	2711	F 6	2719	C 8	2727	F 7	2733	H13	2750	D 6	3703	D 3	3712	E 7	3720	F 7	3730	F12	3743	C 9	3761	G 6	7705	G 4	8702	E 1	9753	C13	T705	B14	T710	G11	T718	E 2	T724	E 2
73	E15	1707	G 7	1710	E15	2707	B 6	2712	E 7	2721	G 3	2728	C13	2734	G10	2751	H 6	3704	C 3	3713	G 3	3722	A 2	3731	G12	3744	G 9	3762	D 6	7705	C 4	8704	E15	9754	F11	T706	E14	T711	F14	T719	H13	T725	C 7
74	G 9	1707	C 7	1725	A15	2708	C 3	2714	C 3	2722	G 7	2729	C13	2735	G10	2760	E14	3706	D 4	3714	F 3	3723	A 2	3732	H13	3747	G12	5701	F11	8702	F 1	8704	E15	9758	D12	T707	B10	T712	F 5	T721	A14		
1702	G15	1707	E 9	2703	G 7	2709	G 3	2715	C 6	2723	G 5	2730	G11	2738	B 3	2799	E15	3707	B 5	3716	H 4	3726	B 9	3733	F 6	3748	B 3	6704	F11	8702	F 1	8705	F15	T701	A14	T708	B10	T716	F10	T722	G 7		
1707	F 3	1707	E12	2704	C 7	2710	G12	2716	D 5	2726	G 8	2732	G12	2739	B 1	3701	B 6	3710	D 8	3719	H 8	3727	E 9	3734	D11	3749	B 2	7702	H13	8702	E 1	8705	F15	T702	A14	T709	D14	T717	F 2	T723	F 2		



RECORER BOARD - LAYOUT DIAGRAM



71	A 1	2729	C 5	3733	B 2	9756	C 3
72	D 5	2730	D 1	3734	D 5	9757	D 3
73	A 5	2731	C 1	3735	D 3	9759	D 4
74	A 1	2732	B 1	3736	B 5	9760	A 2
1701	A 5	2733	C 1	3737	C 5	9761	B 5
1702	B 5	2734	A 1	3738	C 5	9762	D 1
1707	D 3	2735	A 1	3739	A 5	T701	C 5
1709	C 5	2738	D 4	3740	B 4	T702	C 5
1721	B 5	2739	C 4	3742	B 1	T705	B 5
1722	B 5	2740	C 4	3743	A 2	T706	B 5
1725	C 5	2750	B 3	3744	B 2	T709	A 5
2700	B 4	2751	C 2	3747	B 1	T710	C 1
2701	B 5	2760	A 2	3748	D 4	T711	B 5
2703	C 2	3701	A 2	3749	C 5	T712	C 2
2704	A 3	3703	B 4	3750	D 4	T713	A 5
2706	A 3	3704	B 4	3761	C 2	T714	D 5
2707	B 2	3706	B 3	3762	B 3	T715	D 5
2708	B 4	3707	B 2	5701	C 1	T716	D 1
2709	C 3	3710	A 3	6704	B 2	T719	B 1
2710	B 1	3711	C 3	6715	A 2	T720	A 5
2711	B 2	3712	D 1	7701	B 4	T721	C 5
2712	D 1	3713	C 3	7702	B 1	T722	C 2
2713	B 3	3714	C 4	7703	A 4	T725	D 2
2714	B 4	3716	C 3	7704	A 4	T7707	A 4
2715	B 3	3719	C 2	7705	B 3	T7708	A 4
2716	B 3	3720	D 2	9701	D 2		
2717	C 3	3721	D 3	9702	D 3		
2718	B 3	3722	D 5	9703	D 3		
2719	A 3	3723	C 5	9705	C 4		
2720	C 3	3724	A 5	9706	D 5		
2721	C 4	3726	A 3	9707	C 2		
2722	C 2	3727	A 3	9751	D 3		
2723	C 2	3728	A 4	9752	D 5		
2726	C 2	3730	B 1	9753	D 5		
2727	D 2	3731	B 1	9754	C 1		
2728	C 5	3732	B 1	9755	D 1		

CASSETTE ADJUSTMENT

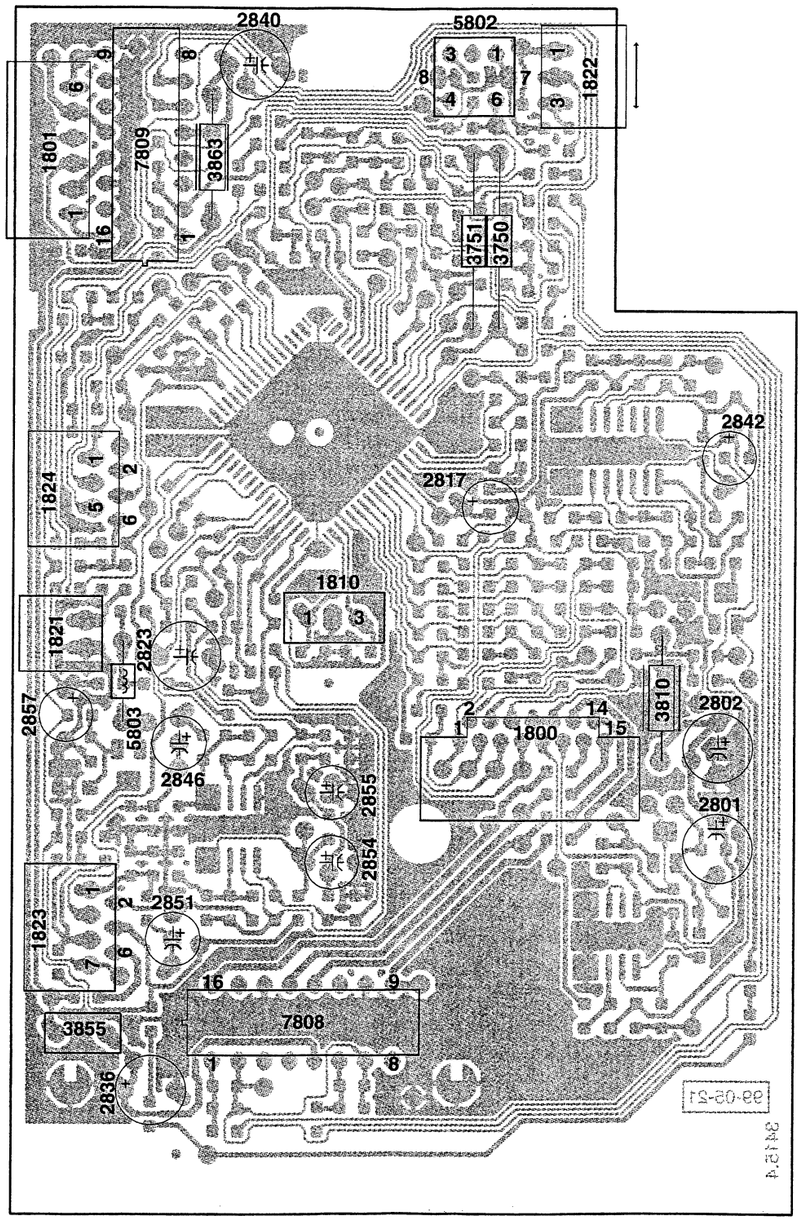
Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	10 kHz SBC420*	Tape	Play	H/P Jack	mV meter	Left hand Screw R/P head	max.
Motor Speed	3150 kHz SBC420*	Tape	Play	H/P Jack	Wow and flutter meter	Preset in motor	**a

* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%.
Morever, the wow and flutter value can be read.

CD99 DA11 - LAYOUT DIAGRAM

CD99 Board component side view



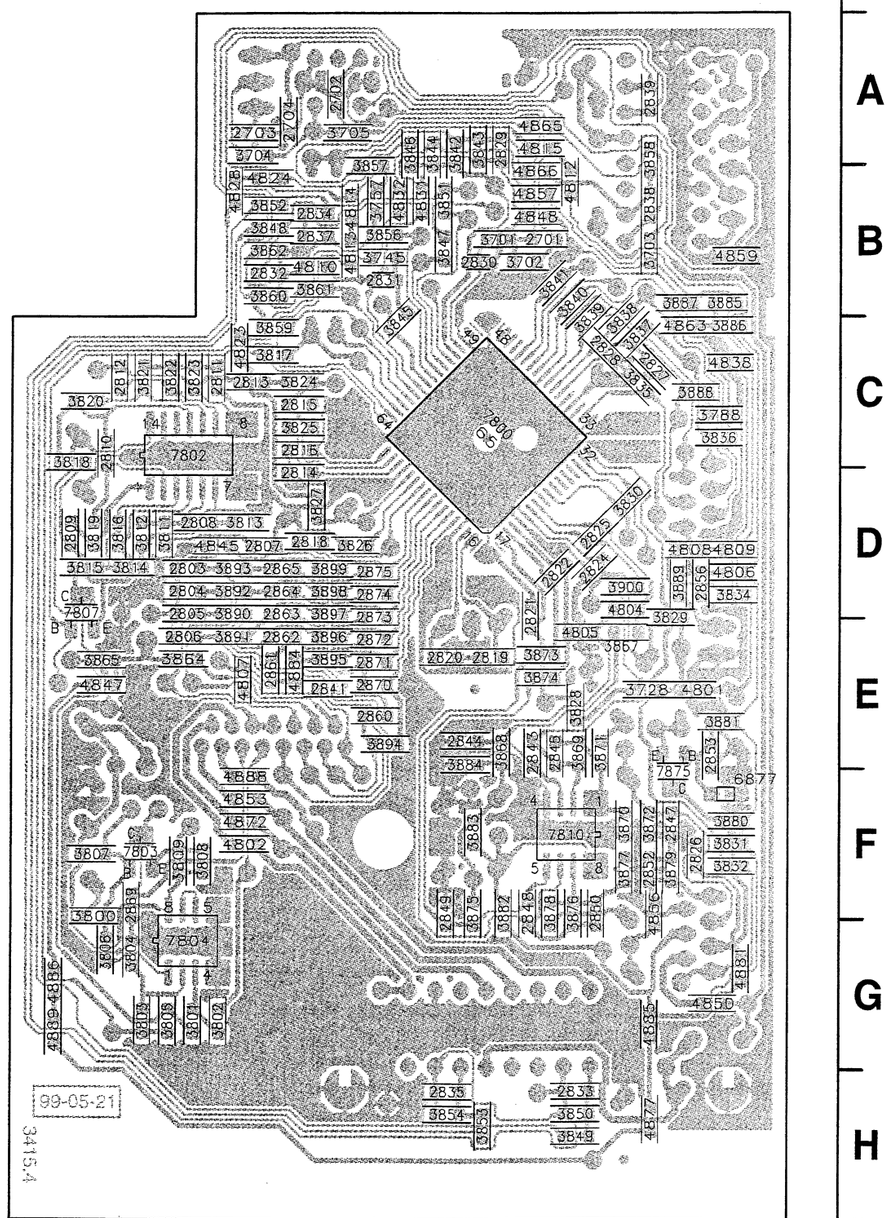
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 Layout stage .4 990817

1800	F2	3703	B5	3876	F4
1801	A5	3704	A2	3877	F4
1810	D3	3705	A3	3878	F4
1821	E5	3728	E5	3879	F5
1822	A2	3745	B3	3880	F5
1823	G5	3750	B2	3881	E5
1824	D5	3751	B2	3882	F4
2701	B4	3757	B3	3883	F3
2702	A2	3788	C5	3884	E3
2703	A2	3800	F1	3885	B5
2704	A2	3801	G2	3886	C5
2801	F1	3802	G2	3887	B5
2802	E1	3803	G1	3888	C5
2803	D2	3804	G1	3889	D5
2804	D2	3805	G1	3890	D2
2805	D2	3806	G1	3891	E2
2806	E1	3807	F1	3892	D2
2807	D2	3808	F2	3893	D2
2808	D2	3809	F1	3894	E3
2809	D1	3810	E1	3895	E2
2810	C1	3811	D1	3896	E2
2811	C2	3812	D1	3897	D2
2812	C1	3813	D2	3898	D2
2813	C2	3814	D1	3899	D2
2814	D2	3815	D1	3900	D4
2815	C2	3816	D1	4801	E5
2816	C2	3817	C2	4802	F2
2817	D2	3818	C1	4804	D4
2818	D2	3819	D1	4805	E4
2819	E4	3820	C1	4806	D5
2820	E3	3821	C1	4807	E2
2821	D4	3822	C1	4808	D5
2822	D4	3823	C2	4809	D5
2823	E4	3824	C2	4810	B2
2824	D4	3825	C2	4812	B4
2825	D4	3826	D3	4813	B3
2826	F5	3827	D2	4814	B3
2827	C5	3828	E4	4815	A4
2828	C4	3829	D5	4823	C2
2829	A4	3830	D4	4824	B2
2830	B3	3831	F5	4828	B2
2831	B3	3832	F5	4831	B3
2832	B2	3834	D5	4832	B3
2833	H4	3835	C4	4838	C5
2834	B2	3836	C5	4845	D2
2835	H3	3837	C4	4847	E1
2836	G5	3838	C4	4848	B4
2837	B2	3839	C4	4850	G5
2838	B5	3840	B4	4853	F2
2839	A5	3841	B4	4856	F5
2840	A4	3842	A3	4857	B4
2841	E2	3843	A3	4859	B5
2842	C1	3844	A3	4863	C5
2843	E4	3845	C3	4865	A4
2844	E3	3846	A3	4866	B4
2845	E4	3847	B3	4872	F2
2846	E4	3848	B2	4877	H5
2847	F5	3849	H4	4881	G5
2848	F4	3850	H4	4884	E2
2849	F3	3851	B3	4885	G5
2850	F4	3852	B2	4886	G1
2851	G4	3853	H3	4888	F2
2852	F5	3854	H3	4889	G1
2853	E5	3855	G5	5802	A2
2854	F3	3856	B3	5803	E5
2855	E3	3857	B3	6877	F5
2856	D5	3858	A5	7800	C4
2857	E5	3859	C2	7802	C2
2860	E3	3860	B2	7803	F1
2861	E2	3861	B2	7804	G2
2862	E2	3862	B2	7807	D1
2863	D2	3863	A4	7808	G4
2864	D2	3864	E1	7809	A5
2865	D2	3865	E1	7810	F4
2869	F1	3867	E4	7875	F5
2870	E3	3868	E4	8401	H3
2871	E3	3869	E4	8402	H5
2872	E3	3870	F4		
2873	D3	3871	E4		
2874	D3	3872	F5		
2875	D3	3873	E4		
3701	B4	3874	E4		
3702	B4	3875	F3		

14-1

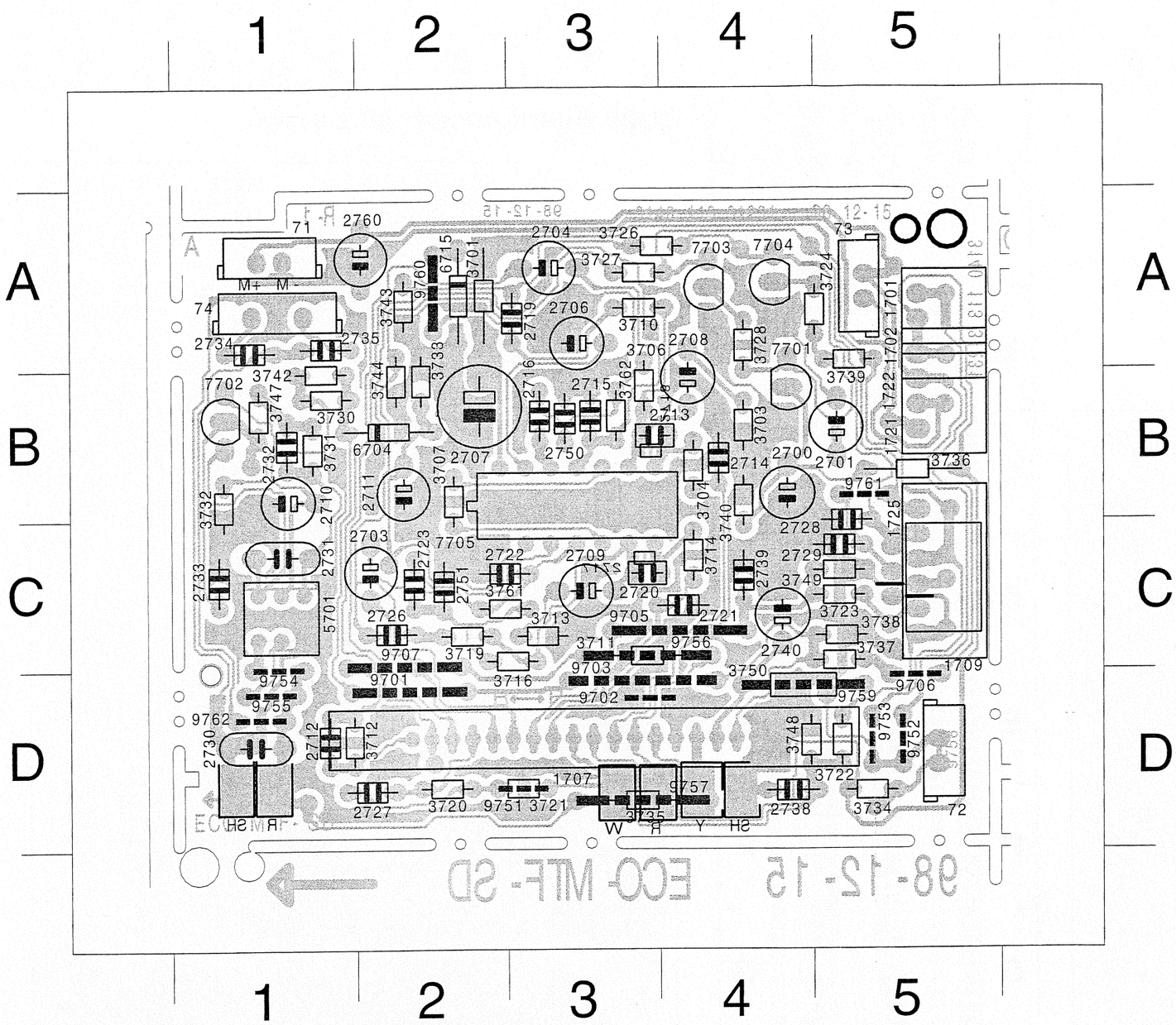
CD99 Board copper side view



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 Layout stage .4 990817

RECORER BOARD - LAYOUT DIAGRAM



71	A 1	2729	C 5	3733	B 2	9756	C 3
72	D 5	2730	D 1	3734	D 5	9757	D 3
73	A 5	2731	C 1	3735	D 3	9759	D 4
74	A 1	2732	B 1	3736	B 5	9760	A 2
1701	A 5	2733	C 1	3737	C 5	9761	B 5
1702	B 5	2734	A 1	3738	C 5	9762	D 1
1707	D 3	2735	A 1	3739	A 5	T701	C 5
1709	C 5	2738	D 4	3740	B 4	T702	C 5
1721	B 5	2739	C 4	3742	B 1	T705	B 5
1722	B 5	2740	C 4	3743	A 2	T706	B 5
1725	C 5	2750	B 3	3744	B 2	T709	A 5
2700	B 4	2751	C 2	3747	B 1	T710	C 1
2701	B 5	2760	A 2	3748	D 4	T711	B 5
2703	C 2	3701	A 2	3749	C 5	T712	C 2
2704	A 3	3703	B 4	3750	D 4	T713	A 5
2706	A 3	3704	B 4	3761	C 2	T714	D 5
2707	B 2	3706	B 3	3762	B 3	T715	D 5
2708	B 4	3707	B 2	5701	C 1	T716	D 1
2709	C 3	3710	A 3	6704	B 2	T719	B 1
2710	B 1	3711	C 3	6715	A 2	T720	A 5
2711	B 2	3712	D 1	7701	B 4	T721	C 5
2712	D 1	3713	C 3	7702	B 1	T722	C 2
2713	B 3	3714	C 4	7703	A 4	T725	D 2
2714	B 4	3716	C 3	7704	A 4	T7707	A 4
2715	B 3	3719	C 2	7705	B 3	T7708	A 4
2716	B 3	3720	D 2	9701	D 2		
2717	C 3	3721	D 3	9702	D 3		
2718	B 3	3722	D 5	9703	D 3		
2719	A 3	3723	C 5	9705	C 4		
2720	C 3	3724	A 5	9706	D 5		
2721	C 4	3726	A 3	9707	C 2		
2722	C 2	3727	A 3	9751	D 3		
2723	C 2	3728	A 4	9752	D 5		
2726	C 2	3730	B 1	9753	D 5		
2727	D 2	3731	B 1	9754	C 1		
2728	C 5	3732	B 1	9755	D 1		

CASSETTE ADJUSTMENT

Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	10 kHz SBC420*	Tape	Play	H/P Jack	mV meter	Left hand Screw R/P head	max.
Motor Speed	3150 kHz SBC420*	Tape	Play	H/P Jack	Wow and flutter meter	Preset in motor	**a

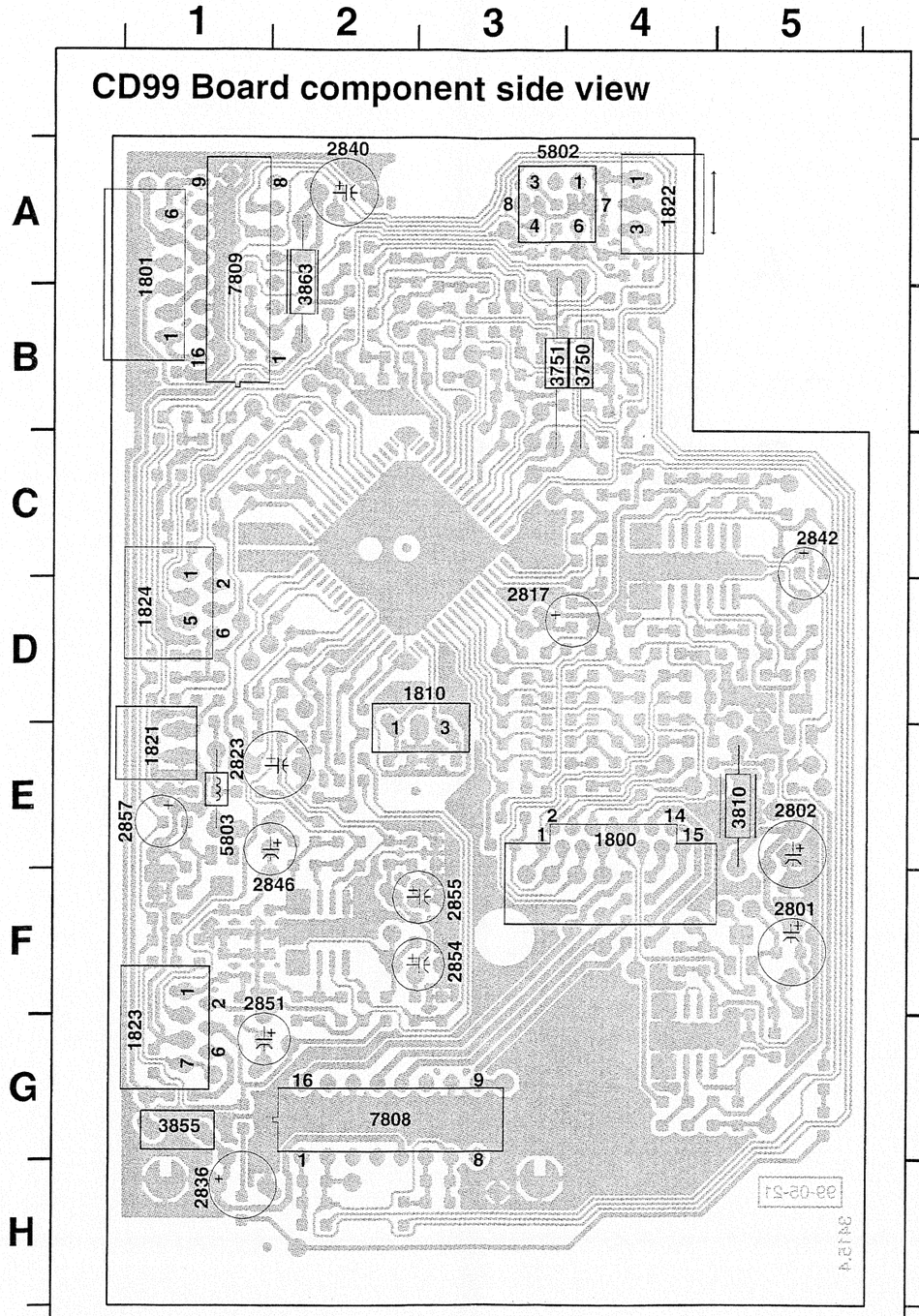
* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%.
Morever, the wow and flutter value can be read.

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CD99 DA11 - LAYOUT DIAGRAM

CD99 Board component side view



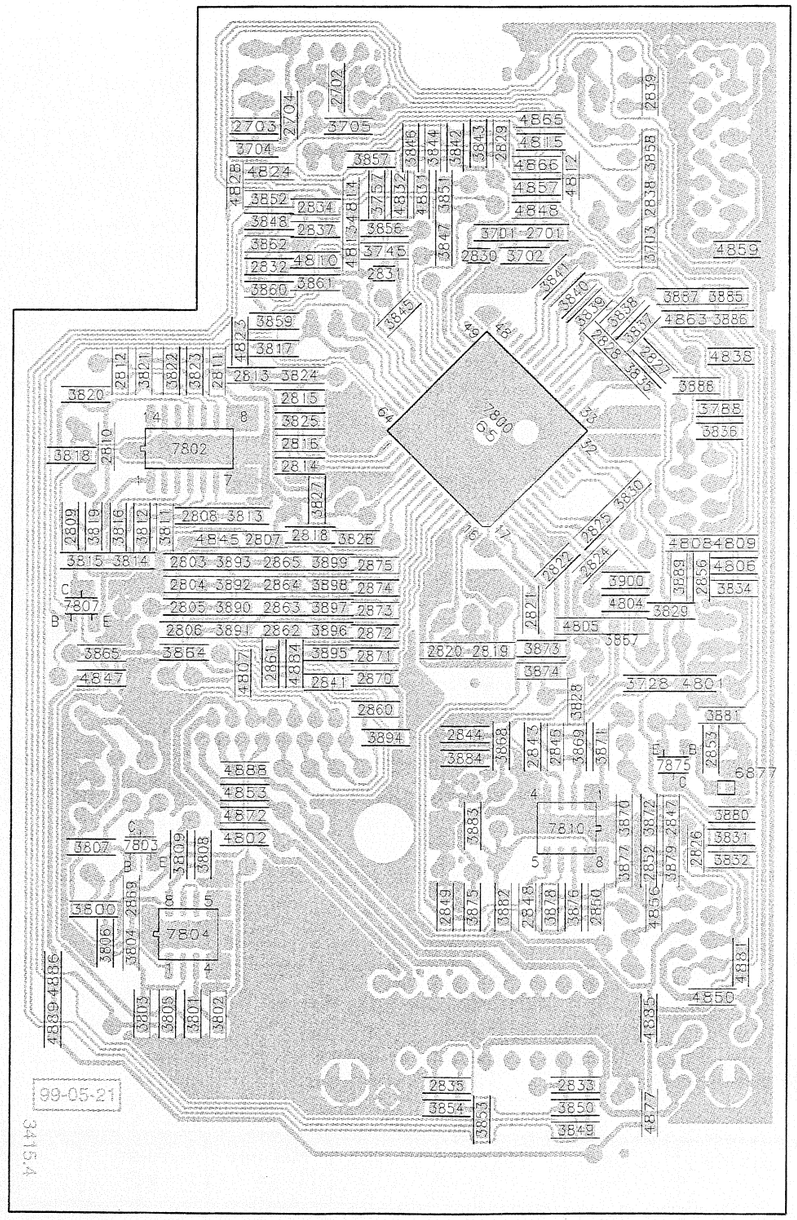
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 Layout stage .4 990817

1800	F2	3703	B5	3876	F4
1801	A5	3704	A2	3877	F4
1810	D3	3705	A3	3878	F4
1821	E5	3728	E5	3879	F5
1822	A2	3745	B3	3880	F5
1823	G5	3750	B2	3881	E5
1824	D5	3751	B2	3882	F4
2701	B4	3757	B3	3883	F3
2702	A2	3788	C5	3884	E3
2703	A2	3800	F1	3885	B5
2704	A2	3801	G2	3886	C5
2801	F1	3802	G2	3887	B5
2802	E1	3803	G1	3888	C5
2803	D2	3804	G1	3889	D5
2804	D2	3805	G1	3890	D2
2805	D2	3806	G1	3891	E2
2806	E1	3807	F1	3892	D2
2807	D2	3808	F2	3893	D2
2808	D2	3809	F1	3894	E3
2809	D1	3810	E1	3895	E2
2810	C1	3811	D1	3896	E2
2811	C2	3812	D1	3897	D2
2812	C1	3813	D2	3898	D2
2813	C2	3814	D1	3899	D2
2814	D2	3815	D1	3900	D4
2815	C2	3816	D1	4801	E5
2816	C2	3817	C2	4802	F2
2817	D2	3818	C1	4804	D4
2818	D2	3819	D1	4805	E4
2819	E4	3820	C1	4806	D5
2820	E3	3821	C1	4807	E2
2821	D4	3822	C1	4808	D5
2822	D4	3823	C2	4809	D5
2823	E4	3824	C2	4810	B2
2824	D4	3825	C2	4812	B4
2825	D4	3826	D3	4813	B3
2826	F5	3827	D2	4814	B3
2827	C5	3828	E4	4815	A4
2828	C4	3829	D5	4823	C2
2829	A4	3830	D4	4824	B2
2830	B3	3831	F5	4828	B2
2831	B3	3832	F5	4831	B3
2832	B2	3834	D5	4832	B3
2833	H4	3835	C4	4838	C5
2834	B2	3836	C5	4845	D2
2835	H3	3837	C4	4847	E1
2836	G5	3838	C4	4848	B4
2837	B2	3839	C4	4850	G5
2838	B5	3840	B4	4853	F2
2839	A5	3841	B4	4856	F5
2840	A4	3842	A3	4857	B4
2841	E2	3843	A3	4859	B5
2842	C1	3844	A3	4863	C5
2843	E4	3845	C3	4865	A4
2844	E3	3846	A3	4866	B4
2845	E4	3847	B3	4872	F2
2846	E4	3848	B2	4877	H5
2847	F5	3849	H4	4881	G5
2848	F4	3850	H4	4884	E2
2849	F3	3851	B3	4885	G5
2850	F4	3852	B2	4886	G1
2851	G4	3853	H3	4888	F2
2852	F5	3854	H3	4889	G1
2853	E5	3855	G5	5802	A2
2854	F3	3856	B3	5803	E5
2855	E3	3857	B3	6877	F5
2856	D5	3858	A5	7800	C4
2857	E5	3859	C2	7802	C2
2860	E3	3860	B2	7803	F1
2861	E2	3861	B2	7804	G2
2862	E2	3862	B2	7807	D1
2863	D2	3863	A4	7808	G4
2864	D2	3864	E1	7809	A5
2865	D2	3865	E1	7810	F4
2869	F1	3867	E4	7875	F5
2870	E3	3868	E4	8401	H3
2871	E3	3869	E4	8402	H5
2872	E3	3870	F4		
2873	D3	3871	E4		
2874	D3	3872	F5		
2875	D3	3873	E4		
3701	B4	3874	E4		
3702	B4	3875	F3		

14-1

CD99 Board copper side view



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 Layout stage .4 990817

CD99 DA11 - CIRCUIT DIAGRAM

14-2

1800 D1 1801 G1 2801 A2 2802 A3 2803 E4 2804 E4 2805 E4
2805 E4 2807 E4 2808 E4 2809 E6 2810 E6 2811 F7 2812 E8
2813 E9 2814 E9 2815 E10 2816 F10 2817 D9 2818 D9 2819 B10
2820 B10 2821 B11 2822 B11 2823 B11 2824 B11 2825 B12 2826 A13
2827 C14 2828 C14 2829 G14 2830 F13 2831 G12 2832 F5 2833 F4
2834 F5 2835 F4 2836 F4 2837 G5 2838 G4 2839 H4 2840 H4
2841 C1 2842 F7 2860 B5 2861 B5 2862 C5 2863 C5 2864 D5
2865 D5 2869 E2 2870 B5 2871 B5 2872 C5 2873 C5 2874 D5
2875 D5 3728 A10 3745 G12 3750 G11 3751 G11 3757 G5 3800 B2
3801 A1 3802 B1 3803 B1 3804 B1 3805 A1 3806 B2 3807 A2
3808 A2 3809 A2 3810 A3 3811 E4 3812 D5 3813 E5 3814 E5
3815 E5 3816 E5 3817 E7 3818 E6 3819 E6 3820 E7 3821 E7
3822 E7 3823 E8 3824 E9 3825 E9 3826 D10 3827 D9 3828 A10
3829 A11 3830 B12 3831 B14 3832 B14 3834 B14 3835 C14 3837 C14
3838 D14 3839 D14 3840 D15 3841 E14 3842 G14 3843 G14 3844 G13
3845 F6 3846 F10 3847 F6 3848 F5 3849 E5 3850 F5 3851 F6
3852 F5 3853 F5 3854 F5 3855 F4 3856 G6 3857 G5 3858 G5
3859 H5 3860 H5 3861 H5 3862 H5 3863 H4 3864 C1 3865 F7
3894 B4 3891 C4 3892 C4 3893 D4 3894 A5 3895 B5 3896 B5
3897 C5 3898 C5 3899 D5 7800 D12 7802-A E6 7802-B E5 7802-C E5
7802-D E8 7802-E E7 7802-F F8 7803 B2 7804-A A1 7804-B C3 7807 E6
7808 E4 7809 G4 8401 H3

1821 D10 1822 E4 1823 B10 1824 D10 2701 E2
2702 E2 2703 E4 2704 E3 2843 A5 2844 A5
2845 A6 2846 A7 2847 A8 2848 C5 2849 C5
2850 B6 2851 C7 2852 C8 2853 E6 2854 D6
2855 D6 2856 E10 2857 E6 3701 E1 3702 E2

CD Part (sheet 1)

Laser power control

HF-Amplifier

table for drive- and digital out recognition

stuffed resistor	drive	digital out
3750	VAM	on
3751	VAM	off
3834	DA11	on
3835	DA11	off

SAA7325H 7800

BITSTREAM DAC

SER. DATA INTERFACE

SER. DATA LOOPBACK INTERF.

VERSAT. INTERF.

MICROCONTROLLER INTERFACE

ADC

PRE-PROCESSING

CONTROL FUNCTION

AUDIO PROCESSOR

FRONT END

VERSATILE INTERFACE

EFM DEMOD

DIG. PLL

SRAM

ADDR

MOTOR CONTROL

OUTPUT STAGES

ERROR CORR.

PEAK DET.

EBU INTERF.

SUBCODE PROCESSOR

VREF GEN.

TIMING

SANYO DA11

TDA7073A

LM358D

BC847C

BC807-40

8.46 MHz

EYE-PATTERN

800mVpp

TB = 0.5 s/div

LOW = CD_RW (high gain)

side entry connector

during Focus search

to 1805 on sheet 2 (uP-interface)

to dig. out circuitry on sheet 2

for digital out: 33E

EVM ..... Vdc measured during PLAY with normal CD or CD-R

V Vdc measured during PLAY with CD-RW

*... for provision only

CD99 Schematic Part1 18081999

CD Part (sheet 2)

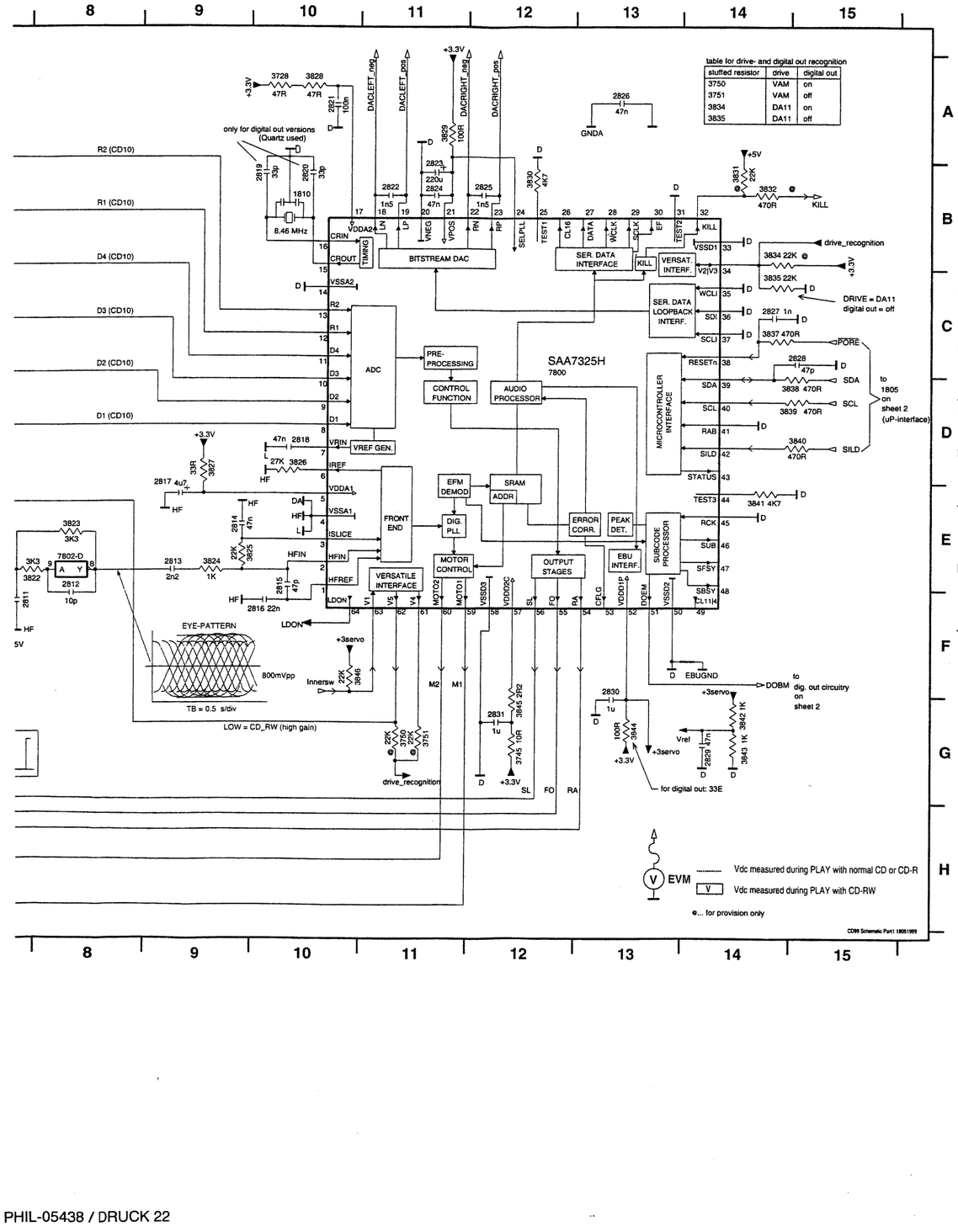
	optical out	coax out
2701	47p	22p
2702	not stuffed	47n
2703	Jumper	100n
2704	not stuffed	100n
5802	not stuffed	stuffed
3701	100R	270R
3702	not stuffed	470R
3703	33R	not stuffed
3705	1R	not stuffed

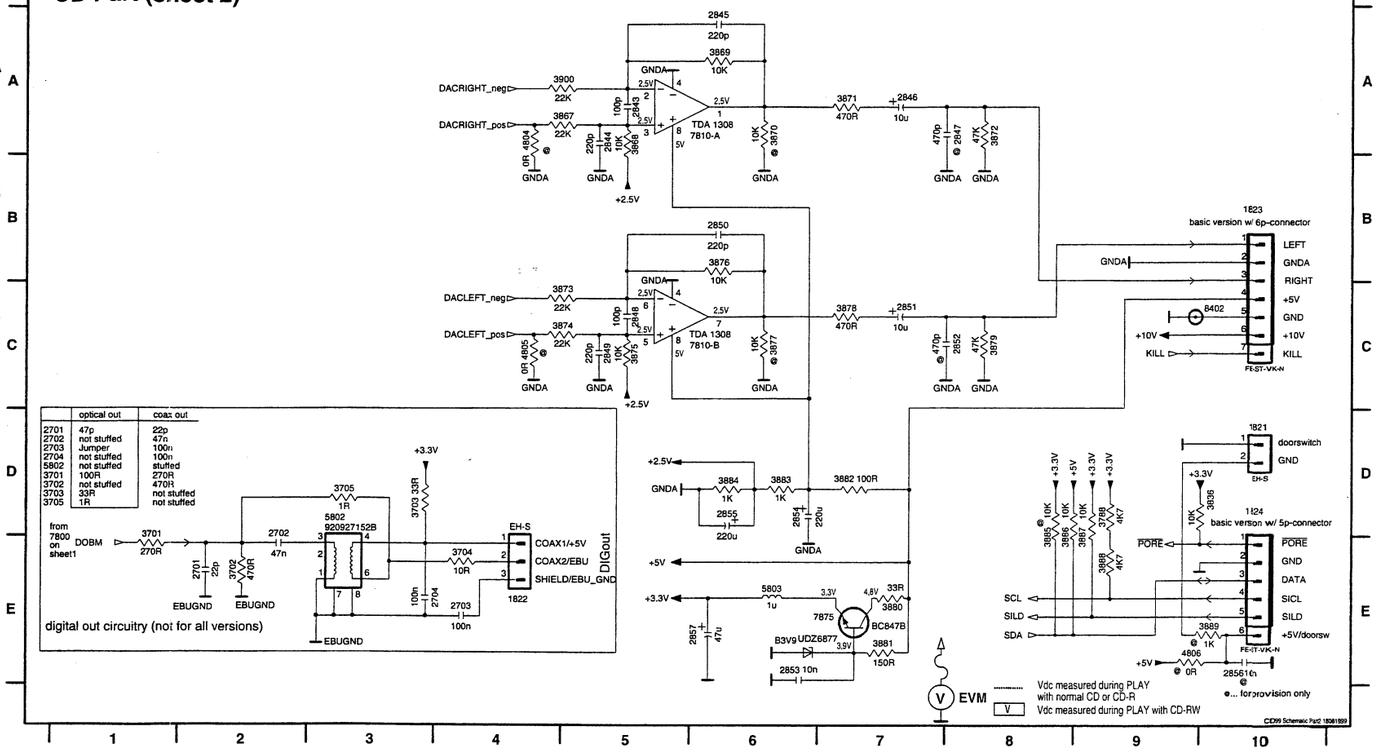
digital out circuitry (not for all versions)

14-2

3829 A11 3830 B12 3831 B14 3832 B14 3834 B14 3835 C14 3837 C14
3838 D14 3839 D14 3840 D15 3841 E14 3842 G14 3843 G14 3844 G13
3845 G12 3846 F10 3847 F6 3848 F5 3849 E5 3850 F5 3851 F6
3852 F5 3853 F5 3854 F5 3855 F4 3856 G6 3857 G5 3858 G5
3859 H5 3860 H5 3861 H5 3862 H5 3863 H4 3864 C1 3865 F7
3890 B4 3891 C4 3892 C4 3893 D4 3894 A5 3895 B5 3896 B5
3897 C5 3898 C5 3899 D5 7800 D12 7802-A E6 7802-B E5 7802-C E5
7802-D E8 7802-E E7 7802-F F8 7803 B2 7804-A A1 7804-B C3 7807 E6
7808 E4 7809 G4 8401 H3

1821 D10 1822 E4 1823 B10 1824 D10 2701 E2
2702 E2 2703 E4 2704 E3 2843 A5 2844 A5
2845 A6 2846 A7 2847 A8 2848 C5 2849 C5
2850 B6 2851 C7 2852 C8 2853 E6 2854 D6
2855 D6 2856 E10 2857 E6 3701 E1 3702 E2
3703 D3 3704 E4 3705 D3 3788 E9 3836 D10
3867 A5 3868 A5 3869 A6 3870 A6 3871 A7
3872 A8 3873 C5 3874 C5 3875 C5 3876 B6
3877 C6 3878 C7 3879 C8 3880 E7 3881 E7
3882 D7 3883 D6 3884 D6 3885 E8 3886 E8
3887 E9 3888 E9 3889 E10 3900 A5 4804 A4
4805 C4 4806 E9 5802 D3 5803 E6 6877 E7
7810-A A5 7810-B C5 7875 E7 8402 C9



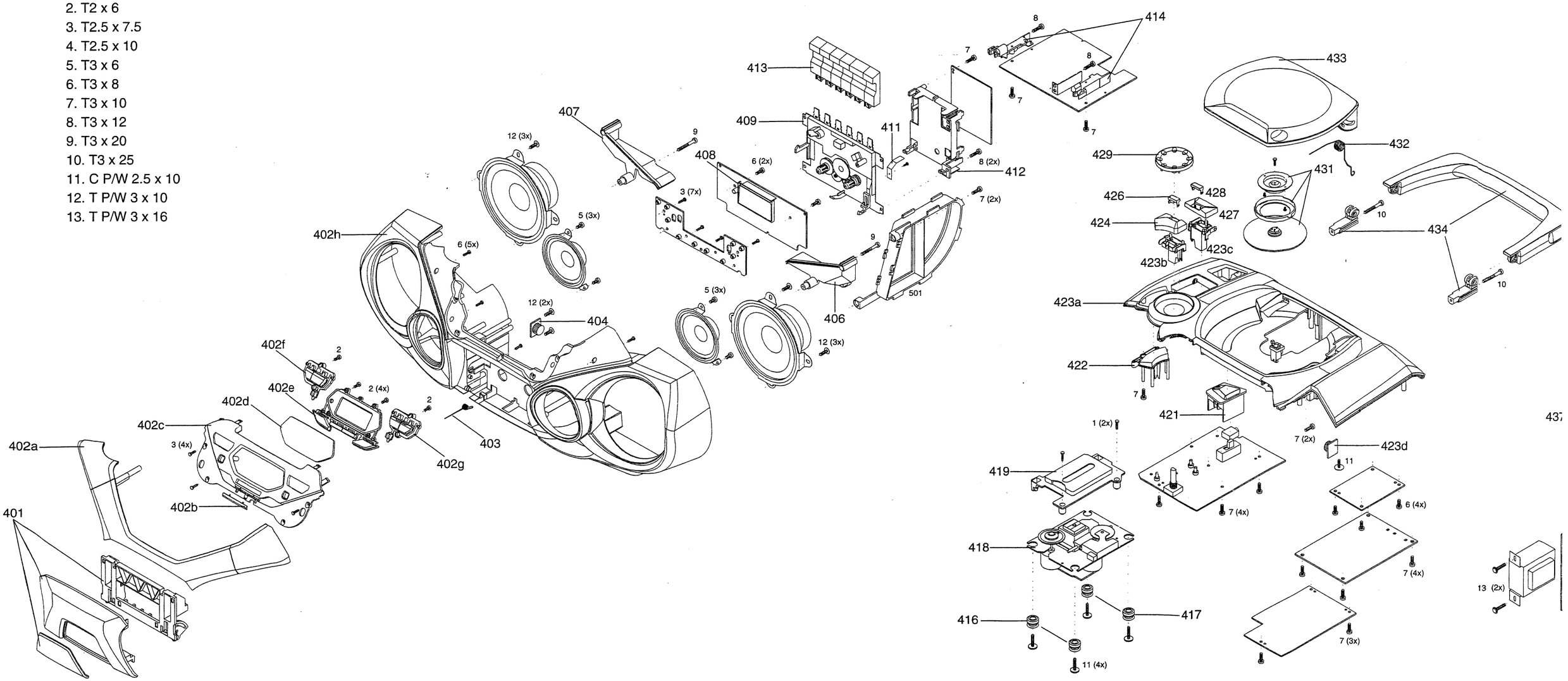


EXPLODED VIEW DIAGRAM (AZ1570) - CABINET

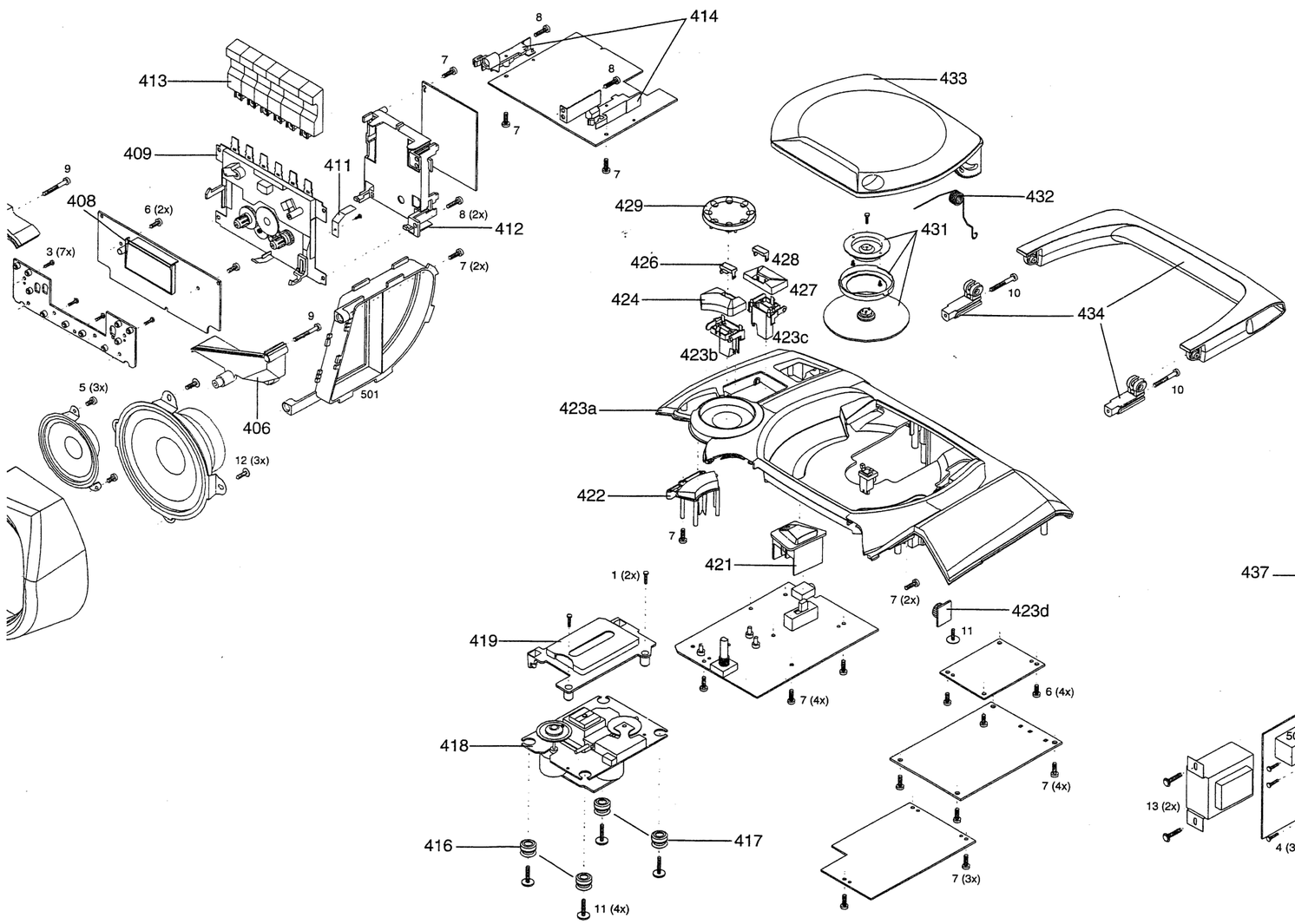
15-1

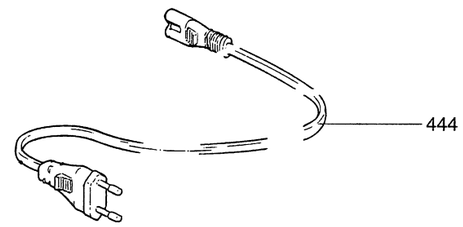
SCREW LIST :

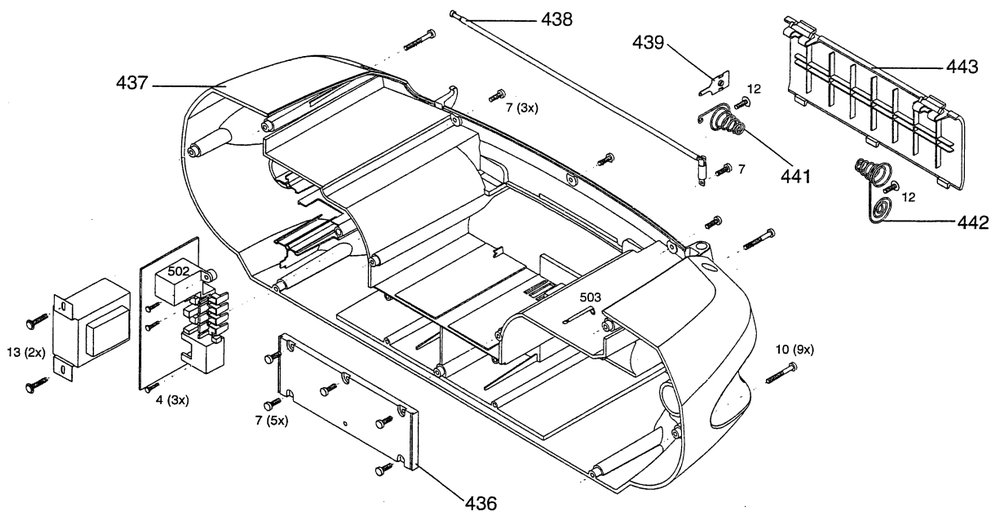
1. C M2 x 10
2. T2 x 6
3. T2.5 x 7.5
4. T2.5 x 10
5. T3 x 6
6. T3 x 8
7. T3 x 10
8. T3 x 12
9. T3 x 20
10. T3 x 25
11. C P/W 2.5 x 10
12. T P/W 3 x 10
13. T P/W 3 x 16



15-1


413
414
409
411
408
412
429
433
432
431
426
428
427
424
423c
423b
434
423a
422
421
423d
419
418
416
417
406
501
9
6 (2x)
3 (7x)
5 (3x)
12 (3x)
7 (2x)
8 (2x)
10
11
1 (2x)
6 (4x)
7 (4x)
7 (3x)
11 (4x)


444

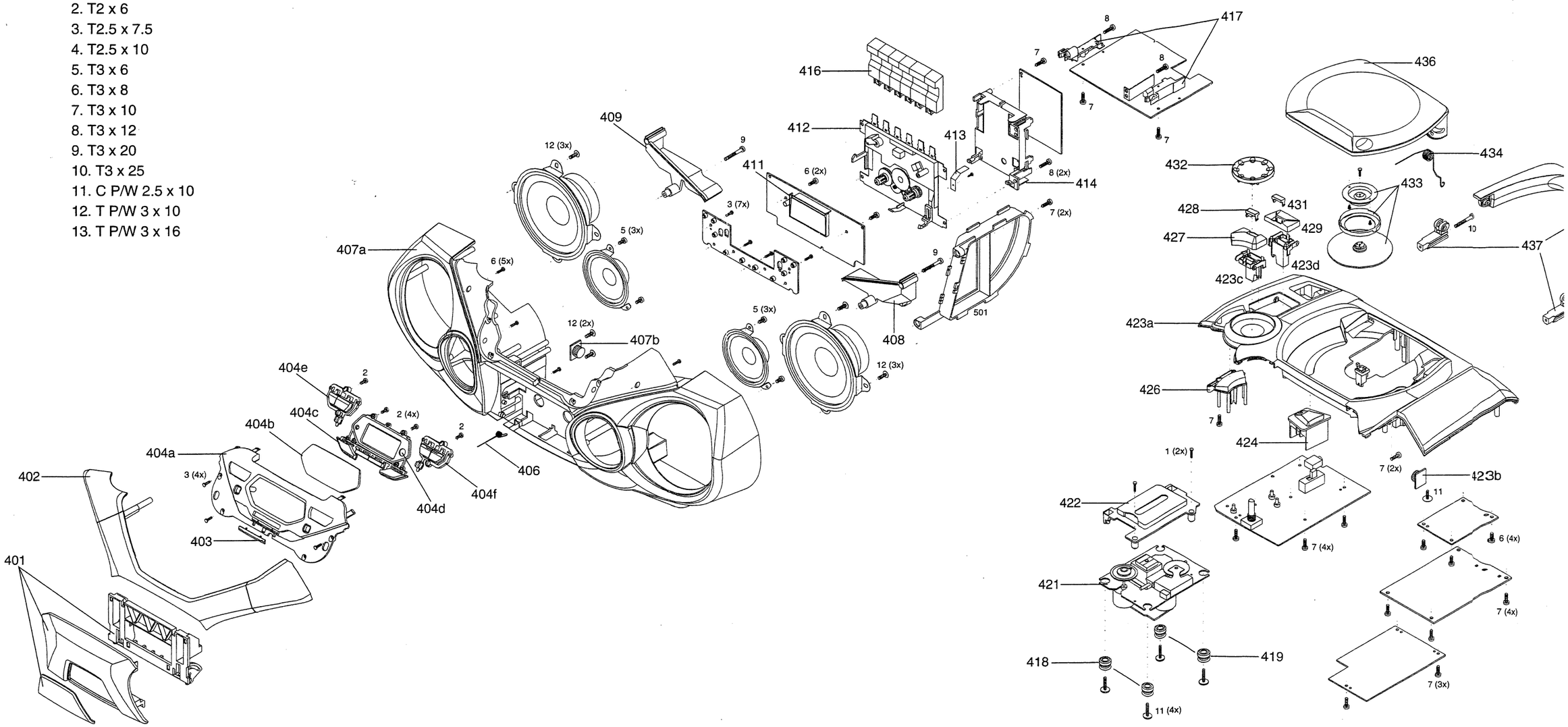

438
439
443
437
12
7 (3x)
7
441
12
442
502
503
13 (2x)
10 (9x)
4 (3x)
7 (5x)
436

EXPLODED VIEW DIAGRAM (AZ1575) - CABINET

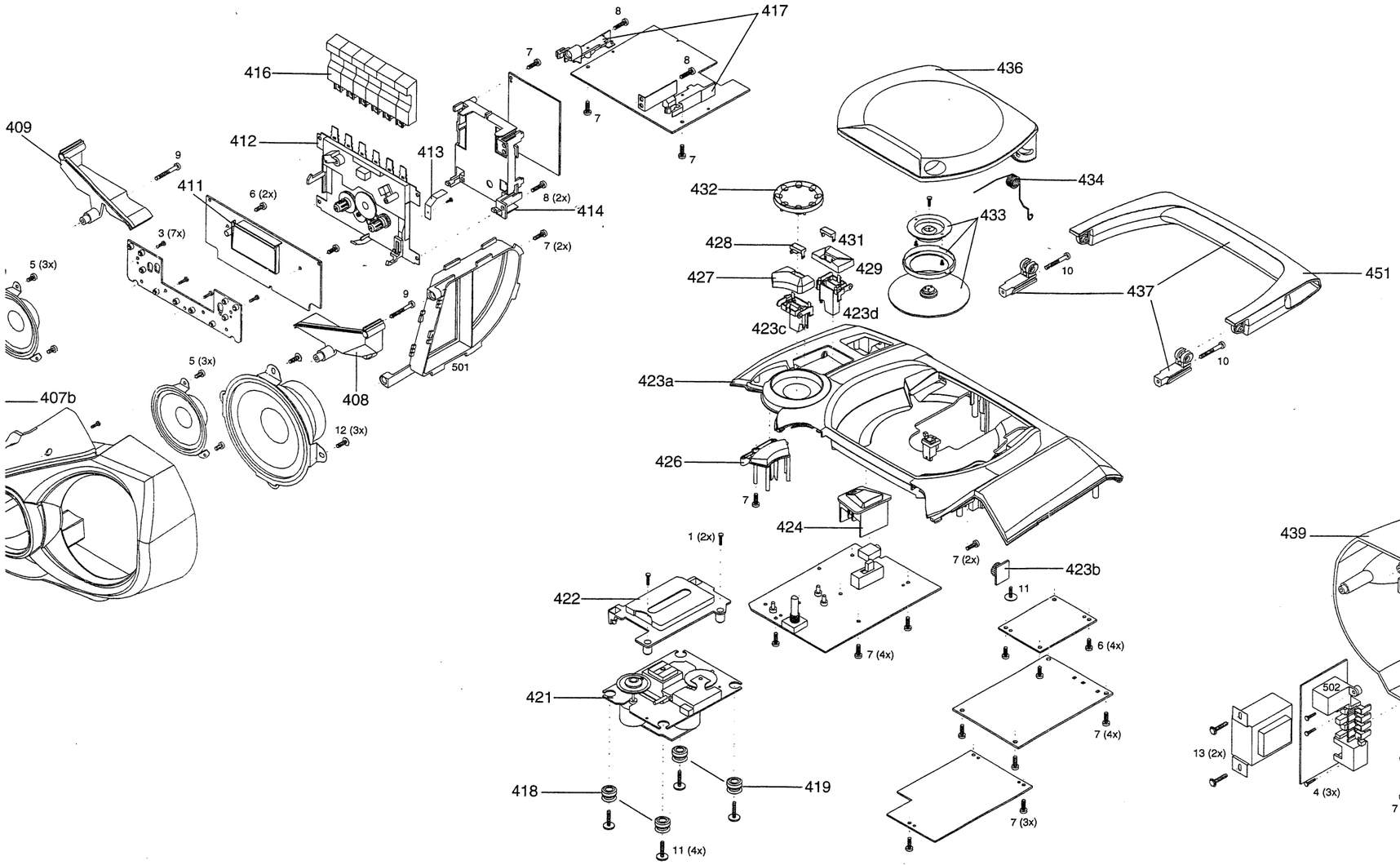
15-4

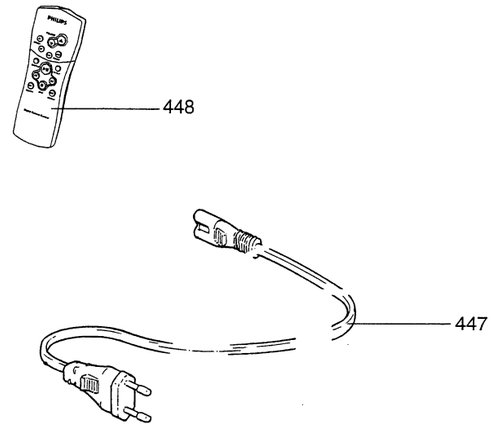
SCREW LIST :

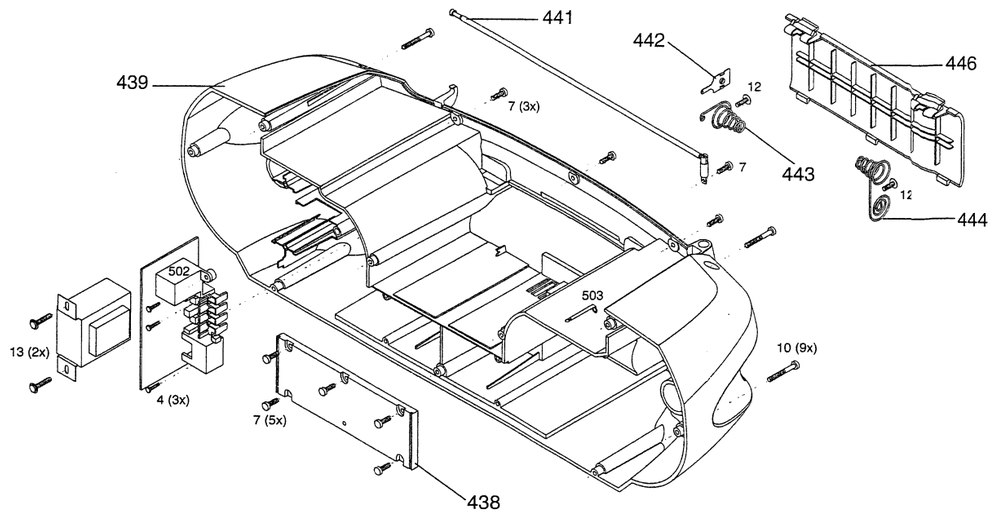
1. C M2 x 10
2. T2 x 6
3. T2.5 x 7.5
4. T2.5 x 10
5. T3 x 6
6. T3 x 8
7. T3 x 10
8. T3 x 12
9. T3 x 20
10. T3 x 25
11. C P/W 2.5 x 10
12. T P/W 3 x 10
13. T P/W 3 x 16



15-4


409
416
412
411
413
414
417
8
7
8
7
7
9
6 (2x)
3 (7x)
8 (2x)
7 (2x)
5 (3x)
9
501
408
407b
5 (3x)
12 (3x)
436
434
432
433
428
431
429
427
423d
423c
423a
451
437
10
10
426
7
424
1 (2x)
7 (2x)
423b
11
422
7 (4x)
6 (4x)
421
7 (4x)
418
419
11 (4x)
7 (3x)


448
447


441
442
446
439
12
7 (3x)
7
443
12
444
502
503
13 (2x)
10 (9x)
4 (3x)
7 (5x)
438

- CAPACITORS -

2801	482212441751	47µF 20% 50V	
2802	482212441751	47µF 20% 50V	
2803	482212613695	82pF 1% NP0 63V	
2804	482212613695	82pF 1% NP0 63V	
2805	482212613695	82pF 1% NP0 63V	
2806	482212613695	82pF 1% NP0 63V	
2807	482212613691	27pF 1% NP0 63V	
2808	532212233538	150pF 2% NP0 63V	
2809	482212613691	27pF 1% NP0 63V	
2810	482212613691	27pF 1% NP0 63V	
2811	532212232659	33pF 5% 50V	
2812	532212232448	10pF 5% NP0 63V	
2813	482212233127	2,2nF 10% X7R 63V	
2814	482212613751	47nF 10% X7R 63V	
2815	482212613692	47pF 1% NP0 63V	
2816	532212232654	22nF 10% X7R 63V	
2817	482212440769	4,7µF 20% 100V	
2818	482212613751	47nF 10% X7R 63V	
2821	482212614585	100nF 10% X7R 50V	
2822	482212613344	1,5nF 5% 63V	
2823	482212442383	220µF 20% 4V	
2824	482212613751	47nF 10% X7R 63V	
2825	482212613344	1,5nF 5% 63V	
2826	482212613751	47nF 10% X7R 63V	
2827	532212231647	1nF 10% X7R 63V	
2828	482212613692	47pF 1% NP0 63V	
2829	482212613751	47nF 10% X7R 63V	
2830	482212614043	1µF +80-20% Y5V 16V	
2831	482212614043	1µF +80-20% Y5V 16V	
2832	532212233538	150pF 2% NP0 63V	
2833	532212232268	470pF 10% 50V	
2834	482212233216	270pF 5% NP0 50V	
2835	532212232268	470pF 10% 50V	
2836	482212441751	47µF 20% 50V	
2837	482212613751	47nF 10% X7R 63V	
2838	532212232654	22nF 10% X7R 63V	
2839	482212614585	100nF 10% X7R 50V	
2840	482212441751	47µF 20% 50V	
2841	482212613751	47nF 10% X7R 63V	
2842	482212421913	1µF 20% 63V	
2843	532212232531	100pF 5% NP0 50V	
2844	482212233575	220pF 5% NP0 63V	
2845	482212233575	220pF 5% NP0 63V	
2846	482212440248	10µF 20% 63V	
2848	532212232531	100pF 5% NP0 50V	
2849	482212233575	220pF 5% NP0 63V	
2850	482212233575	220pF 5% NP0 63V	
2851	482212440248	10µF 20% 63V	
2853	482212233177	10nF 20% X7R 50V	
2854	482212411912	220µF 20% 6,3V	

- CAPACITORS -

2855	482212411912	220µF 20% 6,3V	
2857	482212412362	47µF 4V 20%	
2860	532211680853	560pF 5% NP0 63V	
2861	532212231865	1,5nF 10% X7R 63V	
2862	482212610326	180pF 5%NP0 63V	
2863	482212610326	180pF 5%NP0 63V	
2864	482212610326	180pF 5%NP0 63V	
2865	482212610326	180pF 5%NP0 63V	
2869	482212613751	47nF 10% X7R 63V	
2870	482212233575	220pF 5% NP0 63V	
2871	482212233575	220pF 5% NP0 63V	
2872	482212233575	220pF 5% NP0 63V	
2873	482212233575	220pF 5% NP0 63V	
2874	482212233575	220pF 5% NP0 63V	
2875	482212233575	220pF 5% NP0 63V	

- RESISTORS -

3728	482205120479	47R 5% 0,1W	
3745	482205120109	10R 5% 0,1W	
3757	482205120223	22K 5% 0,1W	
3788	482205120472	4K7 5% 0,1W	
3800	482205120478	4R70 5% 0,1W	
3801	482205120154	150K 5% 0,1W	
3802	482205110102	1K 2% 0,25W	
3803	482205120273	27K 5% 0,1W	
3804	482205120472	4K7 5% 0,1W	
3805	482205120273	27K 5% 0,1W	
3806	482211710361	680R 1% 0,1W	
3807	482211711139	1K5 1% 0,1W	
3808	482205120339	33R 5% 0,1W	
3809	482205120339	33R 5% 0,1W	
3810	482205210478	4R7 5% 0,33W	
3811	482205110102	1K 2% 0,25W	
3812	482205120474	470K 5% 0,1W	
3813	482205120683	68K 5% 0,1W	
3814	482205120332	3K3 5% 0,1W	
3815	482205120472	4K7 5% 0,1W	
3816	482211683933	15K 1% 0,1W	
3817	482211710834	47K 1% 0,1W	
3818	482205120562	5K6 5% 0,1W	
3819	482211683933	15K 1% 0,1W	
3820	482211710965	18K 1% 0,1W	
3821	482205120332	3K3 5% 0,1W	
3822	482205120332	3K3 5% 0,1W	
3823	482205120332	3K3 5% 0,1W	
3824	482205110102	1K 2% 0,25W	
3825	482205120223	22K 5% 0,1W	

ELECTRICAL PARTSLIST - CD99 DA11 16-1

- RESISTORS -

3826	482205120273	27K 5% 0,1W	
3827	482205120339	33R 5% 0,1W	
3828	482205120479	47R 5% 0,1W	
3829	482205120101	100R 5% 0,1W	
3830	482205120472	4K7 5% 0,1W	
3835	482205120223	22K 5% 0,1W	
3836	482211710833	10K 1% 0,1W	
3837	482205120471	470R 5% 0,1W	
3838	482205120471	470R 5% 0,1W	
3839	482205120471	470R 5% 0,1W	
3840	482205120471	470R 5% 0,1W	
3841	482205120472	4K7 5% 0,1W	
3842	482205110102	1K 2% 0,25W	
3843	482205110102	1K 2% 0,25W	
3844	482205120101	100R 5% 0,1W	
3845	482205120228	2R2 5% 0,1W	
3846	482205120223	22K 5% 0,1W	
3847	482211711149	82K 1% 0,1W	
3848	482211710834	47K 1% 0,1W	
3849	482211711148	56K 1% 0,1W	
3850	482205120822	8K2 5% 0,1W	
3851	482211711148	56K 1% 0,1W	
3852	482211710834	47K 1% 0,1W	
3853	482211683933	15K 1% 0,1W	
3854	482205120822	8K2 5% 0,1W	
3855	482211640227	4R6 25% 12V	
3856	482205120683	68K 5% 0,1W	
3857	482205120683	68K 5% 0,1W	
3858	482205120392	3K9 5% 0,1W	
3859	482211710834	47K 1% 0,1W	
3860	482205110102	1K 2% 0,25W	
3861	482211710834	47K 1% 0,1W	
3862	482205110102	1K 2% 0,25W	
3863	482205210338	3R3 5% 0,33W	
3864	482211710833	10K 1% 0,1W	
3865	482205110102	1K 2% 0,25W	
3867	482205120223	22K 5% 0,1W	
3868	482211710833	10K 1% 0,1W	
3869	482211710833	10K 1% 0,1W	
3871	482205120471	470R 5% 0,1W	
3872	482211710834	47K 1% 0,1W	
3873	482205120223	22K 5% 0,1W	
3874	482205120223	22K 5% 0,1W	
3875	482211710833	10K 1% 0,1W	
3876	482211710833	10K 1% 0,1W	
3878	482205120471	470R 5% 0,1W	
3879	482211710834	47K 1% 0,1W	
3880	482205120339	33R 5% 0,1W	
3881	482211710353	150R 1% 0,1W	
3882	482205120101	100R 5% 0,1W	

- RESISTORS -

3883	482205110102	1K 2% 0,25W	
3884	482205110102	1K 2% 0,25W	
3886	482211710833	10K 1% 0,1W	
3887	482211710833	10K 1% 0,1W	
3888	482205120472	4K7 5% 0,1W	
3889	482205110102	1K 2% 0,25W	
3890	482211710837	100K 1% 0.1W	
3891	482211710837	100K 1% 0.1W	
3892	482211710837	100K 1% 0.1W	
3893	482211710837	100K 1% 0.1W	
3894	482211710833	10K 1% 0,1W	
3895	482211710833	10K 1% 0,1W	
3896	482211710833	10K 1% 0,1W	
3897	482211710833	10K 1% 0,1W	
3898	482211710833	10K 1% 0,1W	
3899	482211710833	10K 1% 0,1W	
3900	482205120223	22K 5% 0,1W	
4801	482205120008	Jumper	
4802	482205120008	Jumper	
4807	482205120008	Jumper	
4808	482205120008	Jumper	
4809	482205120008	Jumper	
4810	482205120008	Jumper	
4812	482205120008	Jumper	
4813	482205120008	Jumper	
4814	482205120008	Jumper	
4815	482205120008	Jumper	
4823	482205120008	Jumper	
4824	482205120008	Jumper	
4828	482205120008	Jumper	
4831	482205120008	Jumper	
4832	482205120008	Jumper	
4838	482205120008	Jumper	
4845	482205120008	Jumper	
4847	482205120008	Jumper	
4848	482205120008	Jumper	
4850	482205120008	Jumper	
4853	482205120008	Jumper	
4856	482205120008	Jumper	
4857	482205120008	Jumper	
4859	482205120008	Jumper	
4863	482205120008	Jumper	
4865	482205120008	Jumper	
4866	482205120008	Jumper	
4872	482205120008	Jumper	
4877	482205120008	Jumper	
4881	482205120008	Jumper	
4884	482205120008	Jumper	
4885	482205120008	Jumper	
4886	482205120008	Jumper	

ELECTRIC

- RESISTORS

4888	482
4889	482

- COILS & FIL

1810	482
5803	482

- DIODES -

6877	482

- IC & TRANSI

7800	482
7802	532
7803	532
7804	532
7807	532
7808	482
7809	482
7810	482
7875	482

- MISCELLANI

1800	4822
1823	4822
1824	4822
8000	4822

Note : Only the
normal s

ELECTRICAL PARTSLIST - CD99 DA11

- RESISTORS -

3826	482205120273	27K	5%	0,1W
3827	482205120339	33R	5%	0,1W
3828	482205120479	47R	5%	0,1W
3829	482205120101	100R	5%	0,1W
3830	482205120472	4K7	5%	0,1W
3835	482205120223	22K	5%	0,1W
3836	482211710833	10K	1%	0,1W
3837	482205120471	470R	5%	0,1W
3838	482205120471	470R	5%	0,1W
3839	482205120471	470R	5%	0,1W
3840	482205120471	470R	5%	0,1W
3841	482205120472	4K7	5%	0,1W
3842	482205110102	1K	2%	0,25W
3843	482205110102	1K	2%	0,25W
3844	482205120101	100R	5%	0,1W
3845	482205120228	2R2	5%	0,1W
3846	482205120223	22K	5%	0,1W
3847	482211711149	82K	1%	0,1W
3848	482211710834	47K	1%	0,1W
3849	482211711148	56K	1%	0,1W
3850	482205120822	8K2	5%	0,1W
3851	482211711148	56K	1%	0,1W
3852	482211710834	47K	1%	0,1W
3853	482211683933	15K	1%	0,1W
3854	482205120822	8K2	5%	0,1W
3855	482211640227	4R6	25%	12V
3856	482205120683	68K	5%	0,1W
3857	482205120683	68K	5%	0,1W
3858	482205120392	3K9	5%	0,1W
3859	482211710834	47K	1%	0,1W
3860	482205110102	1K	2%	0,25W
3861	482211710834	47K	1%	0,1W
3862	482205110102	1K	2%	0,25W
3863	482205210338	3R3	5%	0,33W
3864	482211710833	10K	1%	0,1W
3865	482205110102	1K	2%	0,25W
3867	482205120223	22K	5%	0,1W
3868	482211710833	10K	1%	0,1W
3869	482211710833	10K	1%	0,1W
3871	482205120471	470R	5%	0,1W
3872	482211710834	47K	1%	0,1W
3873	482205120223	22K	5%	0,1W
3874	482205120223	22K	5%	0,1W
3875	482211710833	10K	1%	0,1W
3876	482211710833	10K	1%	0,1W
3878	482205120471	470R	5%	0,1W
3879	482211710834	47K	1%	0,1W
3880	482205120339	33R	5%	0,1W
3881	482211710353	150R	1%	0,1W
3882	482205120101	100R	5%	0,1W

- RESISTORS -

3883	482205110102	1K	2%	0,25W
3884	482205110102	1K	2%	0,25W
3886	482211710833	10K	1%	0,1W
3887	482211710833	10K	1%	0,1W
3888	482205120472	4K7	5%	0,1W
3889	482205110102	1K	2%	0,25W
3890	482211710837	100K	1%	0.1W
3891	482211710837	100K	1%	0.1W
3892	482211710837	100K	1%	0.1W
3893	482211710837	100K	1%	0.1W
3894	482211710833	10K	1%	0,1W
3895	482211710833	10K	1%	0,1W
3896	482211710833	10K	1%	0,1W
3897	482211710833	10K	1%	0,1W
3898	482211710833	10K	1%	0,1W
3899	482211710833	10K	1%	0,1W
3900	482205120223	22K	5%	0,1W
4801	482205120008	Jumper		
4802	482205120008	Jumper		
4807	482205120008	Jumper		
4808	482205120008	Jumper		
4809	482205120008	Jumper		
4810	482205120008	Jumper		
4812	482205120008	Jumper		
4813	482205120008	Jumper		
4814	482205120008	Jumper		
4815	482205120008	Jumper		
4823	482205120008	Jumper		
4824	482205120008	Jumper		
4828	482205120008	Jumper		
4831	482205120008	Jumper		
4832	482205120008	Jumper		
4838	482205120008	Jumper		
4845	482205120008	Jumper		
4847	482205120008	Jumper		
4848	482205120008	Jumper		
4850	482205120008	Jumper		
4853	482205120008	Jumper		
4856	482205120008	Jumper		
4857	482205120008	Jumper		
4859	482205120008	Jumper		
4863	482205120008	Jumper		
4865	482205120008	Jumper		
4866	482205120008	Jumper		
4872	482205120008	Jumper		
4877	482205120008	Jumper		
4881	482205120008	Jumper		
4884	482205120008	Jumper		
4885	482205120008	Jumper		
4886	482205120008	Jumper		

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ELECTRICAL PARTSLIST - CD99 DA11

- RESISTORS -

4888	482205120008	Jumper
4889	482205120008	Jumper

- COILS & FILTERS -

1810	482224273557	Filter CST8,46MTW-TF01
5803	482215711231	Coil LAN02TB1R0J

- DIODES -

6877	482213011564	Diode UDZ3.9B

- IC & TRANSISTORS -

7800	482220917324	IC SAA7325H
7802	532220911517	IC PC74HCU04T
7803	532213060123	Trans BC807-40
7804	532220982941	IC LM358D
7807	532213042755	Trans BC847C
7808	482220932852	IC TDA7073A/N2
7809	482220932852	IC TDA7073A/N2
7810	482220933165	IC TDA1308T/N1
7875	482213060511	Trans BC847B

- MISCELLANEOUS -

1800	482226510925	Connector 15P
1823	482226511207	Connector 6P
1824	482226511207	Connector 6P
8000	482232012178	Flexible Foil 15P

Note : Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - CONTROL BOARD

- CAPACITORS -

2400	5322 126 10223	4,7nF 10% X7R 63V
2401	4822 126 14043	1µF +80-20% Y5V 16V
2402	4822 126 14585	100nF 10% X7R 50V
2403	5322 122 32531	100pF 5% NP0 50V
2404	5322 122 32531	100pF 5% NP0 50V
2406	4822 126 14083	4µ7 10V
2407	5322 122 34099	470pF 10% X7R 63V
2408	4822 126 14491	2.2µF 10V
2409	5322 122 32531	100pF 5% NP0 50V
2411	5322 122 32531	100pF 5% NP0 50V
2412	5322 122 32531	100pF 5% NP0 50V
2413	4822 126 14043	1µF +80-20% Y5V 16V
2414	5322 122 32531	100pF 5% NP0 50V
2415	5322 122 32531	100pF 5% NP0 50V
2416	5322 122 32531	100pF 5% NP0 50V
2417	5322 122 32531	100pF 5% NP0 50V
2418	5322 122 32531	100pF 5% NP0 50V
2419	5322 122 32531	100pF 5% NP0 50V
2421	5322 122 31647	1nF 10% X7R 63V
2422	4822 122 33575	220pF 5% NP0 63V
2423	5322 122 31647	1nF 10% X7R 63V
2424	5322 122 32531	100pF 5% NP0 50V
2425	5322 122 32531	100pF 5% NP0 50V
2426	5322 122 32531	100pF 5% NP0 50V
2427	5322 122 32531	100pF 5% NP0 50V
2428	5322 122 32531	100pF 5% NP0 50V
2429	5322 122 32531	100pF 5% NP0 50V
2430	4822 124 23432	100µF 20% 10V
2431	5322 122 34099	470pF 10% X7R 63V
2432	5322 122 32531	100pF 5% NP0 50V
2433	5322 122 32531	100pF 5% NP0 50V
2434	5322 122 34099	470pF 10% X7R 63V
2435	5322 122 32531	100pF 5% NP0 50V
2436	4822 122 33177	10nF 20% X7R 50V
2437	5322 122 32531	100pF 5% NP0 50V
2438	5322 122 32531	100pF 5% NP0 50V
2439	5322 122 32531	100pF 5% NP0 50V
2440	5322 122 32531	100pF 5% NP0 50V
2441	5322 122 32531	100pF 5% NP0 50V
2442	5322 122 32531	100pF 5% NP0 50V
2444	4822 126 13689	18pF 1% NP0 63V

- RESISTORS -

3400	4822 051 20471	470R 5% 0,1W
3401	4822 116 83933	15K 1% 0,1W
3402	4822 117 10837	100K 1% 0.1W
3403	4822 051 20472	4K7 5% 0,1W
3404	4822 117 10833	10K 1% 0,1W
3405	4822 117 12955	2K7 1% 0,1W
3406	4822 051 20223	22K 5% 0,1W
3407	4822 051 20223	22K 5% 0,1W
3408	4822 051 20223	22K 5% 0,1W
3409	4822 051 20223	22K 5% 0,1W
3410	4822 051 20223	22K 5% 0,1W
3411	4822 051 20105	1M 5% 0,1W
3414	4822 117 11449	2K2 5% 0,1W
3415	4822 117 11449	2K2 5% 0,1W
3416	4822 051 20472	4K7 5% 0,1W
3417	4822 051 20472	4K7 5% 0,1W
3418	4822 051 20472	4K7 5% 0,1W
3419	4822 051 20472	4K7 5% 0,1W
3420	4822 051 20472	4K7 5% 0,1W
3421	4822 051 20105	1M 5% 0,1W
3422	4822 051 20332	3K3 5% 0,1W
3423	4822 051 20471	470R 5% 0,1W
3424	4822 051 20471	470R 5% 0,1W
3425	4822 051 20471	470R 5% 0,1W
3426	4822 051 20471	470R 5% 0,1W
3427	4822 051 20822	8K2 5% 0,1W
3428	4822 051 10102	1K 2% 0,25W
3429	4822 051 20472	4K7 5% 0,1W
3430	4822 051 20472	4K7 5% 0,1W
3431	4822 117 10834	47K 1% 0,1W
3432	4822 117 10834	47K 1% 0,1W
3433	4822 117 11449	2K2 5% 0,1W
3434	4822 117 11449	2K2 5% 0,1W
3437	4822 051 10102	1K 2% 0,25W
3438	4822 051 10102	1K 2% 0,25W
3439	4822 051 10102	1K 2% 0,25W
3440	4822 051 10102	1K 2% 0,25W
3441	4822 051 10102	1K 2% 0,25W
3442	4822 051 20472	4K7 5% 0,1W
3443	4822 051 10102	1K 2% 0,25W
3444	4822 051 20472	4K7 5% 0,1W
3445	4822 051 20472	4K7 5% 0,1W
3446	4822 051 20472	4K7 5% 0,1W
3447	4822 051 20822	8K2 5% 0,1W
3448	4822 117 11449	2K2 5% 0,1W

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ELECTRICAL PARTSLIST - CONTROL BOARD

- RESISTORS -

3449	4822 051 10102	1K 2% 0,25W
3452	4822 117 11449	2K2 5% 0,1W
3453	4822 117 11449	2K2 5% 0,1W
3454	4822 051 10102	1K 2% 0,25W
3455	4822 051 20101	100R 5% 0,1W
3456	4822 117 10833	10K 1% 0,1W
3457	4822 117 11503	220R 1% 0.1W
3460	4822 051 20223	22K 5% 0,1W
3461	4822 051 20223	22K 5% 0,1W
3462	4822 051 20223	22K 5% 0,1W
3463	4822 051 20101	100R 5% 0,1W
3464	4822 051 20182	1K8 5% 0,1W
3465	4822 051 20561	560R 5% 0,1W
3466	4822 051 20223	22K 5% 0,1W
3467	4822 051 20223	22K 5% 0,1W
3468	4822 051 20101	100R 5% 0,1W
3469	4822 051 20223	22K 5% 0,1W
3470	4822 051 20223	22K 5% 0,1W
3471	4822 051 20223	22K 5% 0,1W
3472	4822 051 20223	22K 5% 0,1W
3473	4822 051 20223	22K 5% 0,1W
3474	4822 051 20472	4K7 5% 0,1W
3475	4822 051 20223	22K 5% 0,1W
3477	4822 051 20223	22K 5% 0,1W
3478	4822 051 20223	22K 5% 0,1W
3479	4822 051 20223	22K 5% 0,1W
3480	4822 051 20223	22K 5% 0,1W
3482	4822 117 10833	10K 1% 0,1W
3483	4822 051 20105	1M 5% 0,1W
3484	4822 051 20333	33K 5% 0,1W
3485	4822 117 11454	820R 1% 0,1W
3487	4822 051 20124	120K 5% 0,1W
3488	4822 051 20109	10R 5% 0,1W
3489	4822 051 20333	33K 5% 0,1W
3490	4822 051 20472	4K7 5% 0,1W
3498	4822 051 20105	1M 5% 0,1W
3533	4822 051 20101	100R 5% 0,1W
3534	4822 051 20008	Jumper
3535	4822 051 20223	22K 5% 0,1W
3536	4822 051 20223	22K 5% 0,1W
4402	4822 051 20008	Jumper
4403	4822 051 20008	Jumper
4404	4822 051 20008	Jumper
4405	4822 051 20008	Jumper
4406	4822 051 20008	Jumper

- RESISTORS -

4407	4822 051 20008	Jumper
4408	4822 051 20008	Jumper
4409	4822 051 20008	Jumper
4410	4822 051 20008	Jumper
4411	4822 051 20008	Jumper
4412	4822 051 20008	Jumper
4413	4822 051 20008	Jumper
4414	4822 051 20008	Jumper
4415	4822 051 20008	Jumper
4416	4822 051 20008	Jumper
4417	4822 051 20008	Jumper
4418	4822 051 20008	Jumper
4419	4822 051 20008	Jumper
4420	4822 051 20008	Jumper
4421	4822 051 20008	Jumper
4422	4822 051 20008	Jumper

- COILS -

5400	4822 157 62552	Coil 2,2µH
5401	2422 535 94279	Ind Fxd 100µH 5%

- DIODES -

6400	4822 130 11411	Diode BZX284-C3V3
6401	5322 130 34337	Diode BAV99
6403	4822 130 83059	LED TLUR4400

- IC & TRANSISTORS -

7400	3140 110 50860	IC TMP87CK20AF
7410	5322 130 60159	Trans BC846B
7411	5322 130 60159	Trans BC846B
7412	9965 000 04931	IC M24C01-WMN6
7413	3140 110 50730	LCD Display WK-TP5238-RH-B
7413	3140 110 50720	LCD Display LE-06153AP
7414	9322 155 82667	IR Receiver TSOP2236
7415	5322 130 60159	Trans BC846B
7416	5322 130 60159	Trans BC846B
7417	4822 130 60373	Trans BC856B

- MISCELLANEOUS -

1400	2422 540 98455	Crystal 4MHz
1490	4822 265 11207	Connector 6P
1491	4822 267 10956	Connector 7P
1492	4822 267 10756	Connector 13P
1493	4822 267 10956	Connector 7P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - TUNER BOARD ECO6

- CAPACTORS -

2101	4822 126 13692	47pF 1% NP0 63V
2103	5322 122 31647	1nF 10% X7R 63V
2104	5322 122 32531	100pF 5% NP0 50V
2106	2020 800 00204	Var Cap 4,2pF-20pF 100V
2107	4822 121 51319	1µF 10% 63V
2108	5322 122 32531	100pF 5% NP0 50V
2109	5322 122 32448	10pF 5% NP0 63V
2120	5322 122 32658	22pF 5% 50V
2122	4822 122 33891	3,3nF 10% X7R 63V
2123	2238 861 18391	390pF 1% NP0 50V
2125	2020 552 96199	560pF 1% 50V
2126	5322 122 31863	330pF 5% NP0 63V
2127	4822 126 14076	220nF 80/20% 25V
2128	4822 124 40248	10µF 20% 63V
2129	4822 124 41584	100µF 20% 10V
2130	4822 126 13482	470nF 80/20% 16V
2131	4822 126 13482	470nF 80/20% 16V
2132	4822 126 13482	470nF 80/20% 16V
2133	4822 124 21913	1µF 20% 63V
2134	4822 126 13188	15nF 5% X7R 63V
2135	4822 126 13188	15nF 5% X7R 63V
2136	4822 126 14076	220nF 80/20% 25V
2137	4822 126 14076	220nF 80/20% 25V
2138	4822 124 22652	2,2µF 20% 50V
2139	4822 126 14236	15pF 5% 50V
2140	4822 126 13695	82pF 1% NP0 63V
2141	4822 126 13838	100nF 80/20% Y5V 50V
2144	4822 126 13482	470nF 80/20% 16V
2145	4822 122 33575	220pF 5% NP0 63V
2146	4822 122 33575	220pF 5% NP0 63V
2147	4822 122 33575	220pF 5% NP0 63V
2148	4822 122 33127	2,2nF 10% X7R 63V
2150	4822 126 13838	100nF 80/20% Y5V 50V
2152	4822 126 12105	33nF 5% X7R 50V
2153	4822 126 13486	15pF 2% NP0 63V
2155	2020 800 00191	Var Cap 3pF-11pF 100V
2159	5322 122 32659	33pF 5% 50V
2163	4822 126 13838	100nF 80/20% Y5V 50V
2164	4822 126 13482	470nF 80/20% 16V
2165	4822 126 13838	100nF 80/20% Y5V 50V
2166	5322 122 31647	1nF 10% X7R 63V
2167	4822 122 33926	12pF 50V
2186	4822 124 40196	220µF 20% 16V
2187	4822 122 33177	10nF 20% X7R 50V
2188	4822 122 33177	10nF 20% X7R 50V
2189	4822 126 14076	220nF 80/20% 25V
2190	4822 124 81151	Electrolytic 22µF 50V
2191	4822 124 81151	Electrolytic 22µF 50V
2192	5322 122 31647	1nF 10% X7R 63V
2193	5322 122 31647	1nF 10% X7R 63V

- CAPACTORS -

2194	5322 122 31647	1nF 10% X7R 63V
2195	4822 124 81151	22µF 50V
2196	4822 122 33177	10nF 20% X7R 50V
2197	4822 122 33177	10nF 20% X7R 50V

- RESISTORS -

3101	4822 051 20333	33K 5% 0,1W
3102	4822 117 10837	100K 1% 0.1W
3103	4822 051 20822	8K2 5% 0,1W
3104	4822 117 13577	330R 1% 1,25W
3105	4822 117 11503	220R 1% 0.1W
3108	4822 117 11449	2K2 1% 0,1W
3109	4822 117 11449	2K2 1% 0,1W
3123	4822 051 20472	4K7 5% 0,1W
3125	4822 117 10833	10K 1% 0,1W
3128	4822 117 11449	2K2 1% 0,1W
3132	4822 051 20479	47R 5% 0,1W
3134	4822 051 20223	22K 5% 0,1W
3137	4822 116 83933	15K 1% 0,1W
3141	4822 117 11148	56K 1% 0,1W
3142	4822 100 12159	100K 30%
3145	4822 117 11449	2K2 1% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3155	4822 051 20479	47R 5% 0,1W
3158	4822 051 20471	470R 5% 0,1W
3159	4822 051 20471	470R 5% 0,1W
3160	4822 051 20471	470R 5% 0,1W
3161	4822 051 20223	22K 5% 0,1W
3166	4822 051 20479	47R 5% 0,1W
3167	4822 051 20479	47R 5% 0,1W
3169	4822 051 20154	150K 5% 0,1W
3180	4822 117 10833	10K 1% 0,1W
3186	4822 117 11448	180R 1% 0,1W
3187	4822 051 10102	1K 2% 0,25W
3188	4822 117 11449	2K2 1% 0,1W
3189	4822 051 20223	22K 5% 0,1W
3190	4822 117 10833	10K 1% 0,1W
3191	4822 051 20472	4K7 5% 0,1W
3192	4822 051 20105	1M 5% 0,1W
3193	4822 117 11449	2K2 1% 0,1W
3194	4822 117 10837	100K 1% 0.1W
3195	4822 051 20474	470K 5% 0,1W
3196	4822 117 10833	10K 1% 0,1W
4102	4822 051 20334	330K 5% 0,1W
4105	4822 051 20008	Jumper
4107	4822 051 20008	Jumper
4108	4822 051 20008	Jumper
4110	4822 051 20008	Jumper

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ELECTRICAL PARTSLIST - TUNER BOARD ECO6

- COILS & FILTERS -

5102	4822 157 71634	MW Aerial
5103	2422 549 44107	Ind Var 252kHz
5109	4822 242 70665	Filter SFE10,7MS3-A
5110	4822 242 70665	Filter SFE10,7MS3-A
5111	2422 549 44023	Ind Var 450kHz
5112	4822 157 70302	Coil F7MCS-12216N
5114	4822 157 70302	Coil F7MCS-12216N
5119	4822 157 11443	Coil 2,4µH
5121	4822 242 10261	CrystalT 75kHz
5122	2422 549 44108	Ind Var 796kHz
5123	2422 549 44108	Ind Var 796kHz
5130	4822 157 11843	Coil MD7B-01F
5131	4822 157 11843	Coil MD7B-01F

- DIODES -

6103	5322 130 34337	Diode BAV99
6105	4822 130 83075	Diode HN1V02H-B
6120	4822 130 83757	Diode BAS216
6130	4822 130 82833	Diode1SV228
6131	4822 130 82833	Diode1SV228
6181	5322 130 34337	Diode BAV99
6182	4822 130 83757	Diode BAS216
6183	9340 386 90115	Diode BZX284-C11

- IC & TRANSISTORS -

7101	9351 740 80557	IC SM TEA5757H/V1
7102	4822 130 42131	Trans BF550
7104	4822 130 40855	Trans BC337
7105	4822 130 40855	Trans BC337
7109	4822 130 60373	Trans BC856B
7122	5322 130 42755	Trans BC847C
7124	5322 130 42755	Trans BC847C
7180	4822 130 60373	Trans BC856B
7181	5322 130 42755	Trans BC847C
7182	5322 130 42755	Trans BC847C
7183	5322 130 42755	Trans BC847C

- MISCELLANEOUS -

1121	4822 267 10733	Connector 4P
1122	4822 267 10954	Connector 5P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - AF BOARD

- CAPACITORS -

2000	482212480144	220µF 20% 25V
2001	482212614107	330nF +-80/20% Y5V 25V
2002	482212232646	5,6nF 10%X7R 50V
2003	482212614107	330nF +-80/20% Y5V 25V
2004	482212441407	0,47µF 20% 63V
2005	482212232535	680pF 10%X7R 63V
2006	482212233127	2,2nF 10%X7R 63V
2007	482212440433	47µF 20% 25V
2008	482212480791	470µF 16V 20%
2009	223891019852	150nF +-80/20% Y5V 25V
2010	482212440433	47µF 20% 25V
2011	482212441407	0,47µF 20% 63V
2013	223891019852	150nF +-80/20% Y5V 25V
2015	482212411767	470µF 20% 25V
2016	482212440207	100µF 20% 25V
2017	482212232646	5,6nF 10%X7R 50V
2018	482212232535	680pF 10%X7R 63V
2019	482212233127	2,2nF 10%X7R 63V
2020	482212440433	47µF 20% 25V
2021	482212440433	47µF 20% 25V
2022	482212480791	470µF 16V 20%
2023	482212440433	47µF 20% 25V
2025	482212411878	4700µF 16V
2026	482212441407	0,47µF 20% 63V
2027	482212440207	100µF 20% 25V
2031	482212613692	47pF 1% NP0 63V
2032	482212613692	47pF 1% NP0 63V
2033	482212480195	470µF 20% 10V
2034	482212480195	470µF 20% 10V
2035	482212440433	47µF 20% 25V
2036	482212422652	2,2µF 20% 50V
2037	482212422652	2,2µF 20% 50V
2038	482212233127	2,2nF 10%X7R 63V
2039	482212233127	2,2nF 10%X7R 63V
2128	482212441407	0,47µF 20% 63V
2131	482212233127	2,2nF 10%X7R 63V

- RESISTORS -

3000	482211711383	12K 1% 0,1W
3001	482211711449	2K2 1% 0,1W
3002	482205120223	22K 5% 0,1W
3003	482205120223	22K 5% 0,1W
3004	482211711449	2K2 1% 0,1W
3005	482211711449	2K2 1% 0,1W
3007	482205120822	8K2 5% 0,1W
3008	482205120471	470R 5% 0,1W
3009	482211711503	220R 1% 0.1W
3010	482211711449	2K2 1% 0,1W

- RESISTORS -

3011	482211710833	10K 1% 0,1W
3012	482205120121	120R 5% 0,1W
3014	482205120121	120R 5% 0,1W
3015	482205120109	10R 5% 0,1W
3016	482205120822	8K2 5% 0,1W
3017	482205120471	470R 5% 0,1W
3018	482211711449	2K2 1% 0,1W
3019	482211711503	220R 1% 0.1W
3020	482211710833	10K 1% 0,1W
3021	482205120479	47R 5% 0,1W
3022	482211711152	4R7 5%
3023	212010892668	3R3 5%
3024	212010892668	3R3 5%
3025	482211711503	220R 1% 0.1W
3026	482205120471	470R 5% 0,1W
3028	482205120478	4K7 5% 0,1W
3029	482205110102	1K 2% 0,25W
3030	482205120471	470R 5% 0,1W
3031	482205120472	4K7 5% 0,1W
3032	482205120471	470R 5% 0,1W
3033	482211711503	220R 1% 0.1W
3034	482211711507	6K8 1% 0,1W
3035	482211711507	6K8 1% 0,1W
3036	482211710833	10K 1% 0,1W
3038	482205120472	4K7 5% 0,1W
3039	482205120472	4K7 5% 0,1W
3040	482205110102	1K 2% 0,25W
3041	482205110102	1K 2% 0,25W
9020	482205120008	Jumper

- DIODE -

6001	482213083757	Diode BAS216
6002	482213083757	Diode BAS216
6003	482213083757	Diode BAS216
6008	482213011411	Diode BZX284-C3V3
6010	482213083757	Diode BAS216

- IC & TRANSISTORS -

7000	482213040959	Trans BC547B
7001	932213777682	IC TDA7449
7002	482213040981	Trans BC337-25
7004	482220931544	IC TA8227P
7005	482213040981	Trans BC337-25

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ELECTRICAL PARTSLIST - AF BOARD

- IC & TRANSISTORS -

7006	482213040981	Trans BC337-25
7007	482213040981	Trans BC337-25
7008	482213041246	Trans BC327-25
7009	482213044568	Trans BC557B
7010	482213040959	Trans BC547B
7106	482213044568	Trans BC557B

- MISCELLANEOUS -

1000	482226711039	Connector 11P
1005	482226710953	Connector 7P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - FEATURE BOARD

- CAPACITORS -

2545	4822 122 33127	2,2nF 10% X7R 63V
2546	4822 122 33127	2,2nF 10% X7R 63V
2547	5322 122 31866	6,8nF 10% X7R 63V
2548	5322 122 31866	6,8nF 10% X7R 63V
2549	4822 121 51252	470nF 5% 63V
2550	4822 121 51252	470nF 5% 63V
2551	5322 122 31865	1,5nF 10% X7R 63V
2552	5322 122 31865	1,5nF 10% X7R 63V
2553	4822 122 32535	680pF 10% X7R 63V
2554	4822 122 32535	680pF 10% X7R 63V
2556	4822 126 14585	100nF 10% X7R 50V
2557	4822 126 14585	100nF 10% X7R 50V
2558	4822 126 13695	82pF 1% NP0 63V
2559	4822 126 13695	82pF 1% NP0 63V
2560	4822 122 33177	10nF 20% X7R 50V
2561	4822 122 33177	10nF 20% X7R 50V
2562	5322 122 31865	1,5nF10% X7R 63V
2563	5322 122 31865	1,5nF10% X7R 63V
2564	4822 122 33575	220pF 5% NP0 63V
2565	4822 122 33575	220pF 5% NP0 63V
2566	5322 121 42386	100nF 5% 63V
2567	5322 121 42386	100nF 5% 63V
2568	5322 121 42489	33F 5% 250V
2569	5322 121 42489	33F 5% 250V
2570	5322 121 42386	100nF 5% 63V
2571	5322 121 42386	100nF 5% 63V
2572	5322 121 42489	33nF 5% 250V
2573	5322 121 42489	33nF 5% 250V
2574	4822 126 13188	15nF 5% X7R 63V
2575	4822 126 13188	15nF 5% X7R 63V
2576	4822 126 13692	47pF 1% NP0 63V
2577	4822 126 13692	47pF 1% NP0 63V
2578	4822 124 41796	22µF 20% 16V
2579	4822 124 81151	22µF 50V
2580	4822 124 81151	22µF 50V
2581	5322 126 10223	4,7nF 10% X7R 63V
2582	5322 126 10223	4,7nF 10% X7R 63V
2583	5322 126 10223	4,7nF 10% X7R 63V
2584	4822 124 40196	220µF 20% 16V
2585	4822 124 41584	100µF 20% 10V
2586	5322 122 32654	22nF 10% X7R 63V
2587	5322 122 31647	1nF 10% X7R 63V
2588	5322 122 31647	1nF 10% X7R 63V
2589	4822 122 33177	10nF 20% X7R 50V
2590	4822 122 33177	10nF 20% X7R 50V
2591	5322 122 31647	1nF 10% X7R 63V
2592	5322 122 31647	1nF 10% X7R 63V
2595	5322 122 31647	1nF 10% X7R 63V
2596	5322 122 31647	1nF 10% X7R 63V
2597	4822 122 33575	220pF 5% NP0 63V

- CAPACITORS -

2598	4822 122 33575	220pF 5% NP0 63V
2599	4822 124 23432	100µF 20% 10V

- RESISTORS -

3550	4822 117 10965	18K 1% 0,1W
3551	4822 117 10965	18K 1% 0,1W
3552	4822 051 10102	1K 2% 0,25W
3553	4822 051 10102	1K 2% 0,25W
3554	4822 051 20562	5K6 5% 0,1W
3555	4822 051 20562	5K6 5% 0,1W
3556	4822 117 13579	220K 1% 0.1W
3557	4822 117 13579	220K 1% 0.1W
3558	4822 117 10837	100K 1% 0.1W
3559	4822 117 10837	100K 1% 0.1W
3562	4822 116 83933	15K 1% 0,1W
3563	4822 116 83933	15K 1% 0,1W
3564	4822 051 20273	27K 5% 0,1W
3565	4822 051 20273	27K 5% 0,1W
3566	4822 117 11149	82K 1% 0,1W
3567	4822 117 11149	82K 1% 0,1W
3573	4822 051 20683	68K 5% 0,1W
3574	4822 051 20683	68K 5% 0,1W
3575	4822 116 83933	15K 1% 0,1W
3576	4822 116 83933	15K 1% 0,1W
3577	4822 051 20333	33K 5% 0,1W
3578	4822 051 20333	33K 5% 0,1W
3579	4822 117 10837	100K 1% 0.1W
3580	4822 117 10837	100K 1% 0.1W
3581	4822 117 13579	220K 1% 0.1W
3582	4822 117 13579	220K 1% 0.1W
3583	4822 051 20333	33K 5% 0,1W
3584	4822 051 20333	33K 5% 0,1W
3585	4822 051 20333	33K 5% 0,1W
3586	4822 051 20333	33K 5% 0,1W
3587	4822 117 13579	220K 1% 0.1W
3588	4822 117 13579	220K 1% 0.1W
3589	4822 117 10965	18K 1% 0,1W
3590	4822 117 10965	18K 1% 0,1W
3591	4822 051 20154	150K 5% 0,1W
3592	4822 051 20154	150K 5% 0,1W
3593	4822 051 20683	68K 5% 0,1W
3594	4822 051 20683	68K 5% 0,1W
3595	4822 117 11149	82K 1% 0,1W
3596	4822 117 11149	82K 1% 0,1W
3597	4822 051 20822	8K2 5% 0,1W
3598	4822 051 20822	8K2 5% 0,1W
3599	4822 051 20154	150K 5% 0,1W
3600	4822 051 20154	150K 5% 0,1W
3601	4822 051 20333	33K 5% 0,1W

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ELECTRICAL PARTSLIST - FEATURE BOARD

- RESISTORS -

3602	4822 051 20333	33K 5% 0,1W
3603	4822 051 20333	33K 5% 0,1W
3604	4822 051 20333	33K 5% 0,1W
3605	4822 117 11454	820R 1% 0,1W
3608	4822 116 83933	15K 1% 0,1W
3609	4822 116 83933	15K 1% 0,1W
3610	4822 116 83933	15K 1% 0,1W
3611	4822 117 10834	47K 1% 0,1W
3612	4822 117 12521	68R 1% 0,1W
3613	4822 117 10833	10K 1% 0,1W
3614	4822 051 20479	47R 5% 0,1W
3617	4822 051 20101	100R 5% 0,1W
3620	4822 117 10834	47K 1% 0,1W
3621	4822 117 10834	47K 1% 0,1W
3622	4822 051 20472	4K7 5% 0,1W
3623	4822 051 20472	4K7 5% 0,1W
3626	4822 117 10833	10K 1% 0,1W
3628	4822 117 10833	10K 1% 0,1W
3630	4822 051 20339	33R 5% 0,1W
3631	4822 051 20008	Jumper
4500	4822 051 20008	Jumper
4501	4822 051 20008	Jumper
4502	4822 051 20008	Jumper
4503	4822 051 20008	Jumper
4504	4822 051 20008	Jumper
4505	4822 051 20008	Jumper
4506	4822 051 20008	Jumper
4507	4822 051 20008	Jumper
4508	4822 051 20008	Jumper
4509	4822 051 20008	Jumper
4510	4822 051 20008	Jumper
4511	4822 051 20008	Jumper
4513	4822 051 20008	Jumper
4514	4822 051 20008	Jumper
4515	4822 051 20008	Jumper
4518	4822 051 20008	Jumper
4519	4822 051 20008	Jumper
4520	4822 051 20008	Jumper
4521	4822 051 20008	Jumper
4522	4822 051 20008	Jumper
4523	4822 051 20008	Jumper
4524	4822 051 20008	Jumper
4525	4822 051 20008	Jumper
4528	4822 051 20008	Jumper
4529	4822 051 20008	Jumper
4530	4822 051 20008	Jumper
4531	4822 051 20008	Jumper

- COIL -

5200	4822 157 10586	2,2µH 10%

- DIODES -

6550	4822 130 83757	Diode BAS216
6551	4822 130 83757	Diode BAS216
6552	4822 130 83757	Diode BAS216
6553	9322 033 20682	LED VS TLHG4405
6554	9322 146 69682	LED VS TLHO4400
6555	4822 130 31878	Diode 1N4003G

- IC & TRANSISTORS -

7200	4822 130 60373	Trans BC856B
7552	5322 130 60159	Trans BC846B
7553	5322 130 60159	Trans BC846B
7554	5322 130 60159	Trans BC846B
7555	5322 130 60159	Trans BC846B
7556	5322 130 60159	Trans BC846B
7557	5322 130 60159	Trans BC846B
7558	5322 209 14482	IC HEF4069UBT
7559	5322 130 60159	Trans BC846B
7560	4822 130 60373	Trans BC856B

- MISCELLANEOUS -

1250	4822 267 10958	Connector 5P
1251	4822 265 11183	Connector 4P
1501	2422 026 05076	Connector 1P
1504	4822 267 10756	Connector 13P
1551	4822 277 11846	Slide Switch
1552	2422 128 02922	Push Switch
1553	2422 128 02922	Push Switch
1554	2422 128 02922	Push Switch
1555	4822 273 10366	Rotary Switch
1625	4822 265 11207	Connector 6P
1801	4822 265 11207	Connector 6P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - RECORDER BOARD

- CAPACITORS -

2703	482212481151	22µF 50V
2704	482212481151	22µF 50V
2706	482212440433	47µF 20% 25V
2707	482212440196	220µF 20% 16V
2708	482212440433	47µF 20% 25V
2709	482212440433	47µF 20% 25V
2710	482212441584	100µF 20% 10V
2711	482212481151	22µF 50V
2712	482212612878	1,5nF 10% 16V
2714	482212612878	1,5nF 10% 16V
2715	482212151387	10nF 20% 16V
2716	482212612882	100nF +80-20% 50V
2719	482212613098	5,6nF 20% 16V
2721	482212612878	1,5nF 10% 16V
2722	482212151387	10nF 20% 16V
2723	482212612882	100nF +80-20% 50V
2726	482212613098	5,6nF 20% 16V
2727	482212612878	1,5nF 10% 16V
2728	482212611714	4,7nF 20%
2729	482212611714	4,7nF 20%
2730	202030090561	1,2nF 10%
2732	482212210577	3,3nF 10% 16V
2733	482212151387	10nF 20% 16V
2738	482212151387	10nF 20% 16V
2739	482212151387	10nF 20% 16V
2750	482212613098	5,6nF 20% 16V
2751	482212613098	5,6nF 20% 16V

- RESISTORS -

3701	482211652175	100R 5% 0,5W
3703	482211683868	150R 5% 0,5W
3704	482211683872	220R 5% 0,5W
3706	482211652272	330K 5% 0,5W
3707	482211652285	470K 5% 0,5W
3710	482211652264	27K 5% 0,5W
3712	482211652238	12K 5% 0,5W
3713	482211683868	150R 5% 0,5W
3714	482211683872	220R 5% 0,5W
3716	482211652272	330K 5% 0,5W
3719	482211652264	27K 5% 0,5W
3720	482211652238	12K 5% 0,5W
3722	482211652257	22K 5% 0,5W
3723	482211652257	22K 5% 0,5W
3726	482211652256	2K2 5% 0,5W
3727	482211652256	2K2 5% 0,5W
3730	482211683868	150R 5% 0,5W
3731	482211652291	56K 5% 0,5W
3732	482211652176	10R 5% 0,5W
3733	482211130893	4M7 5% 0,2W
3734	482205021003	10K 1% 0,6W
3743	482211683883	470R 5% 0,5W
3744	482211683883	470R 5% 0,5W
3747	482211683868	150R 5% 0,5W
3748	482211683883	470R 5% 0,5W
3749	482211683883	470R 5% 0,5W
3761	482211652289	5K6 5% 0,5W
3762	482211652289	5K6 5% 0,5W

- COIL -

5701	482215710371	Coil 100kHz

- DIODE -

6704	482213030621	Diode 1N4148

- IC & TRANSISTORS -

7702	482213040981	Trans BC337-25
7705	482220917498	IC AN7323
1707	482227711504	Push Switch

- MISCELLANEOUS -

1725	482226511207	Connector 6P

Note : Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - KEYBOARD

- MISCELLANEOUS -

1450	2422 128 02917 Tact Switch
1451	2422 128 02917 Tact Switch
1452	2422 128 02917 Tact Switch
1453	2422 128 02917 Tact Switch
1454	2422 128 02917 Tact Switch
1455	2422 128 02917 Tact Switch
1456	2422 128 02917 Tact Switch
1457	2422 128 02917 Tact Switch
1458	2422 128 02917 Tact Switch
1459	2422 128 02917 Tact Switch
1494	4822 267 10956 Connector 7P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - POWER BOARD

- CAPACITORS -

2028	4822 122 33197 1nF 10% 50V
2029	4822 122 33197 1nF 10% 50V
2030	5322 121 42386 100nF 5% 63V
2031	4822 122 33197 1nF 10% 50V
2032	4822 122 33197 1nF 10% 50V

- DIODES -

6004	4822 130 31878 Diode 1N4003G
6005	4822 130 31878 Diode 1N4003G
6006	4822 130 31878 Diode 1N4003G
6007	4822 130 31878 Diode 1N4003G

- MISCELLANEOUS -

1010	⚠ 4822 070 31602 Fuse 1.6A (Not for -/17)
1010	⚠ 2422 086 10962 Fuse 2A (For -/17)
1011	⚠ 4822 272 10366 Voltage Selector (For -/01)
1012	4822 265 20287 Socket Main (Not for -/17)
1012	4822 265 30986 Socket Main (For -/17)

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - MISCELLANEOUS

- CAPACITORS -

2129	2020 009 90099 4,7µF 20% 50V
2130	2020 009 90099 4,7µF 20% 50V

- MISCELLANEOUS -

1010	8240 008 80060 Loudspeaker 4" 4 Ohm
1011	8240 008 80060 Loudspeaker 4" 4 Ohm
1012	8240 008 80070 Loudspeaker 2.5" 8 Ohm
1013	8240 008 80070 Loudspeaker 2.5" 8 Ohm
1014	4822 276 13963 CD Door Switch
1015	⚠ 3140 118 32340 Transformer (For -/00/05/10/13/14)
1015	⚠ 3140 118 32350 Transformer (For -/01/11)
1015	⚠ 3140 118 32360 Transformer (For -/17)
8100	3139 110 34860 FFC Foil 4P 340
8101	3139 110 34420 FFC Foil 5P 340
8400	3139 110 34500 FFC Foil 13P 140
8401	3139 110 34480 FFC Foil 7P 140
8402	3139 110 34470 FFC Foil 7P 08
8500	3139 110 34490 FFC Foil 11P 180
8625	4822 320 12243 Flex Cable 6P 18
8800	3139 110 34360 FFC Foil 6P 280
8801	3139 110 34360 FFC Foil 6P 280

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - CONTROL BOARD

MISCELLANEOUS

1402	4822 267 10756	FFC SOCKET 13P
1405	4822 265 11183	FFC SOCKET 4P
1406	4822 267 10956	FFC SOCKET 7P
1407	4822 265 11207	FFC SOCKET 6P
7400	9322 155 82667	IR RECEIVER TSOP2236
7401	3140 110 50730	LCD WK-TP5238-RH-B
8402	3139 110 36050	FFC FOIL 4P 80MM AD

CAPACITORS

2400	2020 552 96305	4,7uF +80-20% Y5V 10V
2401	4822 126 13883	220pF 5% 50V
2402	3198 016 31020	1nF 10% NP0 25V
2403	4822 126 13881	470pF 5% 50V
2405	4822 124 40433	47uF 20% 25V
2406	4822 122 31765	100pF 5% NP0 63V
2407	4822 122 31765	100pF 2% NP0 63V
2408	4822 122 31765	100pF 5% NP0 63V
2412	4822 122 31765	100pF 5% NP0 63V
2413	3198 017 41050	1uF 20% Y5V 10V
2414	4822 122 31765	100pF 5% NP0 63V
2415	4822 122 31765	100pF 5% NP0 63V
2416	5322 126 11583	10nF 10% X7R 50V
2417	4822 122 33752	15pF 5% NP0 50V
2418	4822 122 33752	15pF 5% NP0 50V
2419	4822 122 31765	100pF 5% NP0 63V
2420	4822 122 31765	100pF 5% NP0 63V
2421	4822 122 31765	100pF 5% NP0 63V
2422	4822 126 14305	100nF 10% X7R 16V
2423	4822 124 41584	100uF 20% 10V
2424	4822 122 33741	10pF 5% NP0 50V
2425	4822 122 33741	10pF 5% NP0 50V
2426	5322 126 11583	10nF 10% X7R 50V
2427	5322 126 11583	10nF 10% X7R 50V
2428	5322 126 11583	10nF 10% X7R 50V
2429	4822 122 31765	100pF 5% NP0 63V
2430	4822 122 31765	100pF 5% NP0 63V
2431	4822 122 31765	100pF 5% NP0 63V
2432	4822 122 31765	100pF 5% NP0 63V
2434	4822 126 14491	2.2uF 10V 0805
2435	4822 124 41584	100uF 20% 10V
2436	3198 017 42230	22nF 20% Y5V 50V
2437	4822 122 33741	10pF 5% NP0 50V
2438	4822 122 33741	10pF 5% NP0 50V
2439	4822 122 33741	10pF 5% NP0 50V
2440	4822 122 31765	100pF 5% NP0 63V
2441	5322 126 11578	1nF 10% X7R 50V
2442	4822 126 13881	470pF 5% 50V
2443	4822 126 13881	470pF 5% 50V

RESISTORS

3400	4822 051 30101	100R 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30102	1K 5% 0,062W
3403	4822 117 13632	100K 1% 0.62W
3404	4822 051 30221	220R 5% 0,062W
3405	4822 051 30223	22K 5% 0,062W
3406	4822 051 30223	22K 5% 0,062W
3407	4822 051 30223	22K 5% 0,062W
3408	4822 051 30223	22K 5% 0,062W
3409	4822 051 30223	22K 5% 0,062W
3411	4822 051 30103	10K 5% 0,062W
3412	4822 051 30334	330K 5% 0,062W
3413	4822 051 30681	680R 5% 0,062W
3414	4822 051 30472	4,7K 5% 0,062W
3415	4822 051 30121	120R 5% 0,062W
3416	4822 117 12971	15R 5% MCR03 0,62W
3417	4822 051 30223	22K 5% 0,062W
3418	4822 051 30472	4,7K 5% 0,062W
3420	4822 051 30392	3,9K 5% 0,062W
3421	4822 051 30153	15K 5% 0,062W
3422	4822 117 13632	100K 1% 0.62W
3423	4822 051 30392	3,9K 5% 0,062W
3424	4822 051 30102	1K 5% 0,062W
3425	4822 051 30102	1K 5% 0,062W
3426	4822 051 30392	3,9K 5% 0,062W
3427	4822 051 30102	1K 5% 0,062W
3428	4822 051 30332	3,3K 5% 0,062W
3429	4822 051 30102	1K 5% 0,062W
3430	4822 051 30102	1K 5% 0,062W
3431	4822 051 30471	470R 5% 0,062W
3432	4822 051 30472	4,7K 5% 0,062W
3433	4822 051 30472	4,7K 5% 0,062W
3435	4822 051 30223	22K 5% 0,062W
3436	4822 051 30223	22K 5% 0,062W
3437	4822 051 30223	22K 5% 0,062W
3438	4822 051 30223	22K 5% 0,062W
3439	4822 051 30223	22K 5% 0,062W
3440	4822 051 30102	1K 5% 0,062W
3441	4822 051 30472	4,7K 5% 0,062W
3442	4822 051 30472	4,7K 5% 0,062W
3443	4822 051 30472	4,7K 5% 0,062W
3444	4822 051 30102	1K 5% 0,062W
3445	4822 051 30101	100R 5% 0,062W
3446	4822 051 30102	1K 5% 0,062W
3447	4822 051 30223	22K 5% 0,062W
3448	4822 051 30223	22K 5% 0,062W
3449	4822 051 30222	2,2K 5% 0,062W
3450	4822 051 30102	1K 5% 0,062W
3451	4822 051 30222	2,2K 5% 0,062W
3455	4822 051 30101	100R 5% 0,062W

ELECTRICAL PARTSLIST - CONTROL BOARD

MISCELLANEOUS

1402	4822 267 10756	FFC SOCKET 13P
1405	4822 265 11183	FFC SOCKET 4P
1406	4822 267 10956	FFC SOCKET 7P
1407	4822 265 11207	FFC SOCKET 6P
7400	9322 155 82667	IR RECEIVER TSOP2236
7401	3140 110 50730	LCD WK-TP5238-RH-B
8402	3139 110 36050	FFC FOIL 4P 80MM AD

CAPACITORS

2400	2020 552 96305	4,7uF +80-20% Y5V 10V
2401	4822 126 13883	220pF 5% 50V
2402	3198 016 31020	1nF 10% NP0 25V
2403	4822 126 13881	470pF 5% 50V
2405	4822 124 40433	47uF 20% 25V
2406	4822 122 31765	100pF 5% NP0 63V
2407	4822 122 31765	100pF 2% NP0 63V
2408	4822 122 31765	100pF 5% NP0 63V
2412	4822 122 31765	100pF 5% NP0 63V
2413	3198 017 41050	1uF 20% Y5V 10V
2414	4822 122 31765	100pF 5% NP0 63V
2415	4822 122 31765	100pF 5% NP0 63V
2416	5322 126 11583	10nF 10% X7R 50V
2417	4822 122 33752	15pF 5% NP0 50V
2418	4822 122 33752	15pF 5% NP0 50V
2419	4822 122 31765	100pF 5% NP0 63V
2420	4822 122 31765	100pF 5% NP0 63V
2421	4822 122 31765	100pF 5% NP0 63V
2422	4822 126 14305	100nF 10% X7R 16V
2423	4822 124 41584	100uF 20% 10V
2424	4822 122 33741	10pF 5% NP0 50V
2425	4822 122 33741	10pF 5% NP0 50V
2426	5322 126 11583	10nF 10% X7R 50V
2427	5322 126 11583	10nF 10% X7R 50V
2428	5322 126 11583	10nF 10% X7R 50V
2429	4822 122 31765	100pF 5% NP0 63V
2430	4822 122 31765	100pF 5% NP0 63V
2431	4822 122 31765	100pF 5% NP0 63V
2432	4822 122 31765	100pF 5% NP0 63V
2434	4822 126 14491	2.2uF 10V 0805
2435	4822 124 41584	100uF 20% 10V
2436	3198 017 42230	22nF 20% Y5V 50V
2437	4822 122 33741	10pF 5% NP0 50V
2438	4822 122 33741	10pF 5% NP0 50V
2439	4822 122 33741	10pF 5% NP0 50V
2440	4822 122 31765	100pF 5% NP0 63V
2441	5322 126 11578	1nF 10% X7R 50V
2442	4822 126 13881	470pF 5% 50V
2443	4822 126 13881	470pF 5% 50V

RESISTORS

3400	4822 051 30101	100R 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30102	1K 5% 0,062W
3403	4822 117 13632	100K 1% 0.62W
3404	4822 051 30221	220R 5% 0,062W
3405	4822 051 30223	22K 5% 0,062W
3406	4822 051 30223	22K 5% 0,062W
3407	4822 051 30223	22K 5% 0,062W
3408	4822 051 30223	22K 5% 0,062W
3409	4822 051 30223	22K 5% 0,062W
3411	4822 051 30103	10K 5% 0,062W
3412	4822 051 30334	330K 5% 0,062W
3413	4822 051 30681	680R 5% 0,062W
3414	4822 051 30472	4,7K 5% 0,062W
3415	4822 051 30121	120R 5% 0,062W
3416	4822 117 12971	15R 5% MCR03 0,62W
3417	4822 051 30223	22K 5% 0,062W
3418	4822 051 30472	4,7K 5% 0,062W
3420	4822 051 30392	3,9K 5% 0,062W
3421	4822 051 30153	15K 5% 0,062W
3422	4822 117 13632	100K 1% 0.62W
3423	4822 051 30392	3,9K 5% 0,062W
3424	4822 051 30102	1K 5% 0,062W
3425	4822 051 30102	1K 5% 0,062W
3426	4822 051 30392	3,9K 5% 0,062W
3427	4822 051 30102	1K 5% 0,062W
3428	4822 051 30332	3,3K 5% 0,062W
3429	4822 051 30102	1K 5% 0,062W
3430	4822 051 30102	1K 5% 0,062W
3431	4822 051 30471	470R 5% 0,062W
3432	4822 051 30472	4,7K 5% 0,062W
3433	4822 051 30472	4,7K 5% 0,062W
3435	4822 051 30223	22K 5% 0,062W
3436	4822 051 30223	22K 5% 0,062W
3437	4822 051 30223	22K 5% 0,062W
3438	4822 051 30223	22K 5% 0,062W
3439	4822 051 30223	22K 5% 0,062W
3440	4822 051 30102	1K 5% 0,062W
3441	4822 051 30472	4,7K 5% 0,062W
3442	4822 051 30472	4,7K 5% 0,062W
3443	4822 051 30472	4,7K 5% 0,062W
3444	4822 051 30102	1K 5% 0,062W
3445	4822 051 30101	100R 5% 0,062W
3446	4822 051 30102	1K 5% 0,062W
3447	4822 051 30223	22K 5% 0,062W
3448	4822 051 30223	22K 5% 0,062W
3449	4822 051 30222	2,2K 5% 0,062W
3450	4822 051 30102	1K 5% 0,062W
3451	4822 051 30222	2,2K 5% 0,062W
3455	4822 051 30101	100R 5% 0,062W

ELECTRICAL PARTSLIST - CONTROL BOARD

RESISTORS

3456	4822 051 30103	10K 5% 0,062W
3457	4822 051 30103	10K 5% 0,062W
3458	4822 051 30222	2,2K 5% 0,062W
3459	4822 051 30562	5,6K 5% 0,062W
3463	4822 051 30222	2,2K 5% 0,062W
3464	4822 051 30562	5,6K 5% 0,062W
3465	4822 051 30102	1K 5% 0,062W
3466	4822 051 30472	4,7K 5% 0,062W
3467	4822 051 30223	22K 5% 0,062W
3468	4822 051 30223	22K 5% 0,062W
3469	4822 051 30223	22K 5% 0,062W
3470	4822 051 30102	1K 5% 0,062W
3471	4822 051 30102	1K 5% 0,062W
3472	4822 117 12925	47K 1% 0,062W
3473	4822 117 12925	47K 1% 0,062W
3474	4822 051 30471	470R 5% 0,062W
3475	4822 051 30471	470R 5% 0,062W
3476	4822 051 30008	0R Jumper 0603
3477	4822 051 30471	470R 5% 0,062W
3478	4822 051 30222	2,2K 5% 0,062W
3479	4822 051 30222	2,2K 5% 0,062W
3480	4822 051 30471	470R 5% 0,062W
3481	4822 051 30101	100R 5% 0,062W
3482	4822 117 12903	1,8K 1% 0,062W
3483	4822 051 30561	560R 5% 0,062W
3485	4822 051 30472	4,7K 5% 0,062W
3486	4822 051 30223	22K 5% 0,062W
4401	4822 051 30008	0R Jumper 0603
4402	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4404	4822 051 30008	0R Jumper 0603
4405	4822 051 30008	0R Jumper 0603
4406	4822 051 30008	0R Jumper 0603
4407	4822 051 30008	0R Jumper 0603
4408	4822 051 30008	0R Jumper 0603
4409	4822 051 30008	0R Jumper 0603
4410	4822 051 30008	0R Jumper 0603
4411	4822 051 30008	0R Jumper 0603
4412	4822 051 30008	0R Jumper 0603
4413	4822 051 30008	0R Jumper 0603
4414	4822 051 30008	0R Jumper 0603
4415	4822 051 30008	0R Jumper 0603
4416	4822 051 30008	0R Jumper 0603
4417	4822 051 30008	0R Jumper 0603
4418	4822 051 30008	0R Jumper 0603
4419	4822 051 30008	0R Jumper 0603
VR201	9965 000 10902	Rotary VR 50KBx2

COILS & FILTERS

1404	2422 540 98455	RES CER 4,194MHz
5400	4822 157 62552	2,2uH
5401	4822 157 62552	2,2uH
5402	2422 535 94279	100uH 5%

DIODES

6400	9322 025 78682	LED TLUR5400
6401	4822 130 11564	UDZ3.9B
6402	4822 130 10838	UDZ3.3B
6403	5322 130 34337	BAV99

TRANSISTORS AND IC

7402	5322 130 42755	BC847C
7403	5322 130 42755	BC847C
7404	4822 130 60511	BC847B
7405	3140 110 51420	TMP86CH21F
7406	9965 000 04931	M24C01-WMN6
7407	4822 130 60511	BC847B

ELECTRICAL PARTSLIST - KEYBOARD

MISCELLANEOUS

1408	2422 128 02917	SWITCH-TACT
1409	2422 128 02917	SWITCH-TACT
1410	2422 128 02917	SWITCH-TACT
1411	2422 128 02917	SWITCH-TACT
1412	2422 128 02917	SWITCH-TACT
1414	2422 128 02917	SWITCH-TACT
1415	2422 128 02917	SWITCH-TACT
1416	2422 128 02917	SWITCH-TACT
1417	2422 128 02917	SWITCH-TACT
1418	2422 128 02917	SWITCH-TACT

RESISTORS

3487	4822 051 30222	2,2K 5% 0,062W
3488	4822 051 30152	1,5K 5% 0,062W
3489	4822 051 30102	1K 5% 0,062W
3490	4822 051 30471	470R 5% 0,062W
3491	4822 051 30222	2,2K 5% 0,062W
3492	4822 051 30152	1,5K 5% 0,062W
3493	4822 051 30102	1K 5% 0,062W
3494	4822 051 30471	470R 5% 0,062W

Note: **Only these parts mentioned in the list are normal service parts.**

A01-555

Service
Service
Service

Product Service Group CE Audio

Service Information

Already published Service Informations: A01-553 3140 785 22790

From week 0135 onwards, the Control Board and the Keyboard are replaced because a new Microprocessor IC (7405) is used.

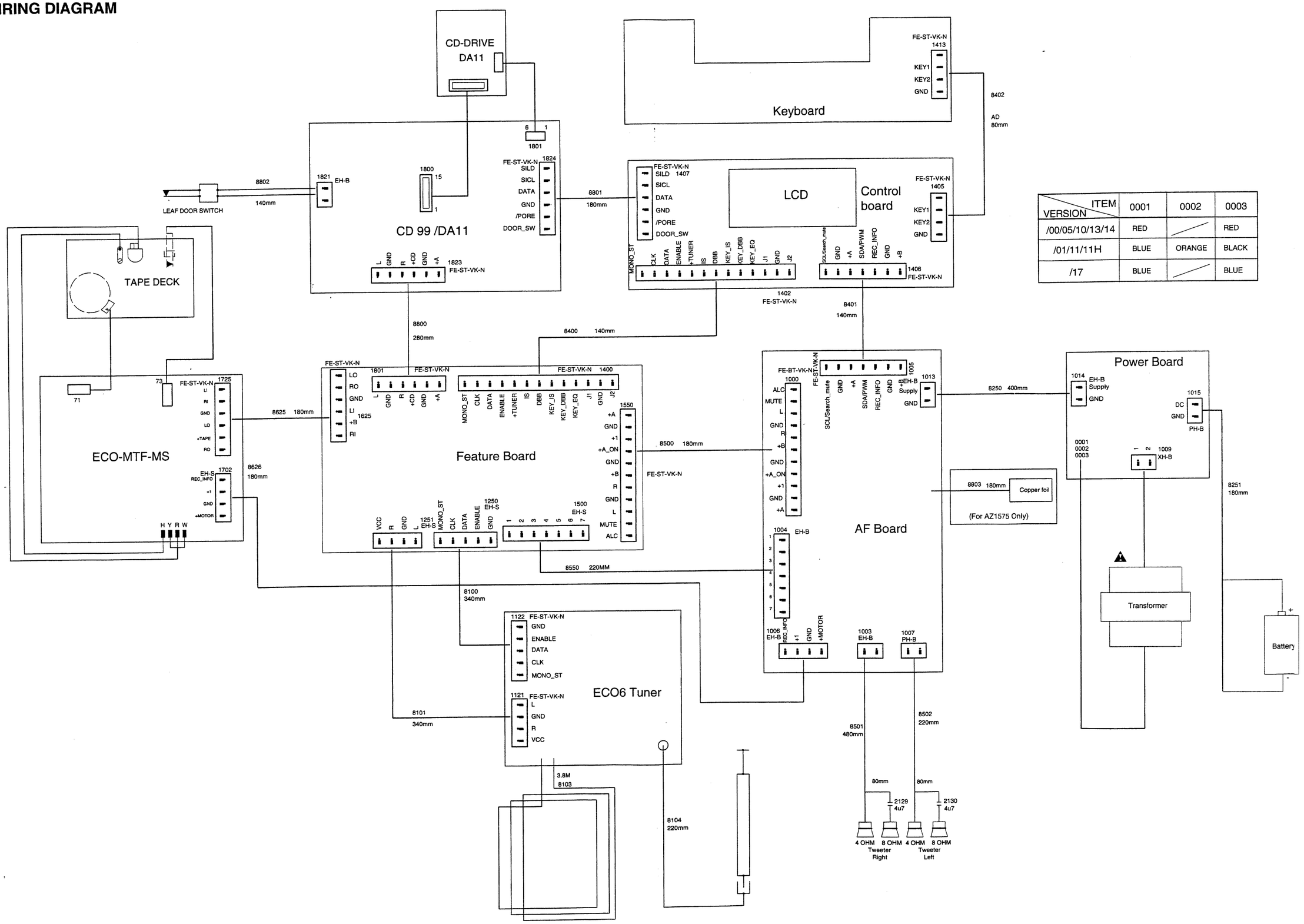
For servicing, please refer to the attached pages.

Wiring Diagram.....6 - 2
Control board - circuit & layout diagram.....9 - 3 ..9 - 4
Keyboard - circuit & layout diagram .....12 - 2
Electrical partslist .....16 - 7..16 - 8

Note :
Code number of new boards : 3140 113 3255x Key board
3140 113 3256x Control board

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WIRING DIAGRAM

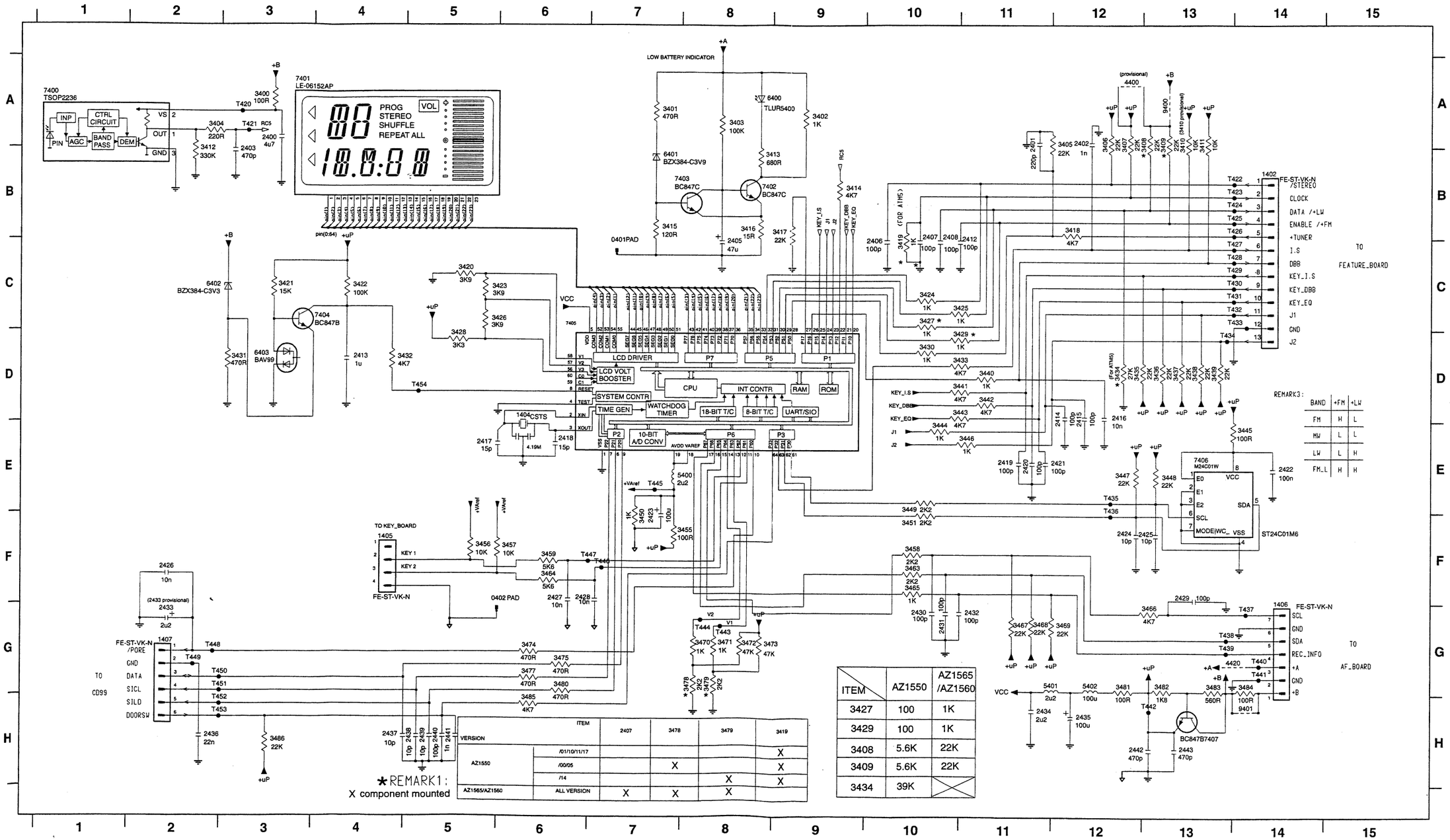


ITEM / VERSION	0001	0002	0003
/00/05/10/13/14	RED		RED
/01/11/11H	BLUE	ORANGE	BLACK
/17	BLUE		BLUE

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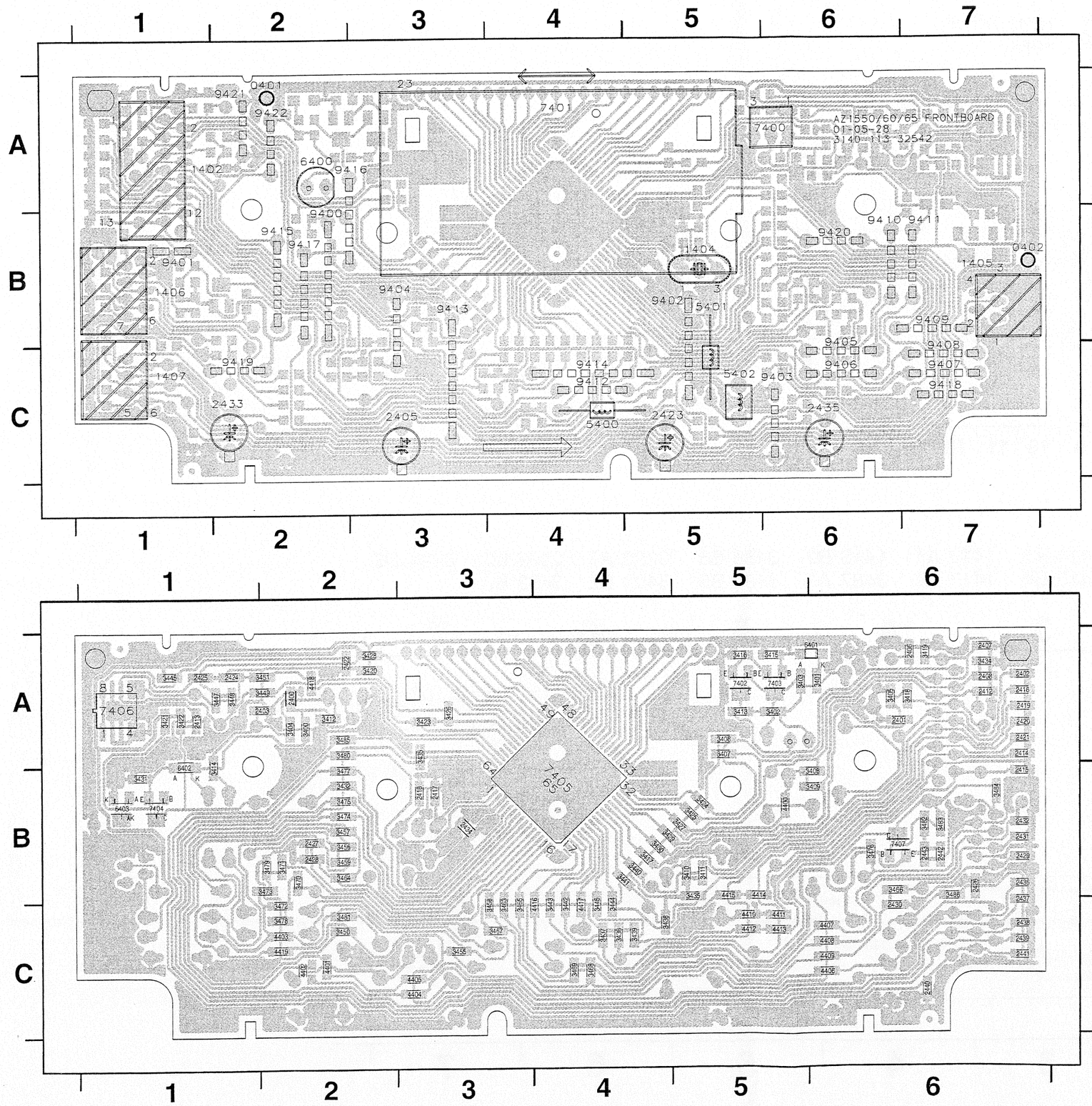
CONTROL BOARD - CIRCUIT DIAGRAM

0401 C7	1407 G2	2406 C10	2415 D12	2421 E11	2427 F6	2433 G2	2439 H5	3401 A7	3407 A12	3413 B8	3419 C10	3425 C10	3431 D3	3437 D13	3443 D10	3449 E10	3458 F10	3467 G11	3473 G8	3480 G6	3486 H3	6400 A8	7402 B8	9400 A13	T424 B13	T430 C13	T436 F12	T442 H13	T448 G2	T454 D5
0402 G5	2400 A3	2407 C10	2416 D12	2422 E14	2428 F7	2434 H11	2440 H5	3402 A9	3408 A13	3414 B9	3420 C5	3426 C5	3432 D4	3438 D13	3444 E10	3450 F7	3459 F6	3468 G11	3474 G6	3481 G12	4400 A12	6401 B7	7403 B8	9401 H14	T425 B13	T431 C13	T437 G14	T443 G8	T449 G2	
1402 C14	2401 A11	2408 C10	2417 E5	2423 F7	2429 F13	2435 H12	2441 H5	3403 A8	3409 A13	3415 B7	3421 C3	3427 C10	3433 D10	3439 D13	3445 E13	3451 F10	3463 F10	3469 G11	3475 G6	3482 G13	4420 G13	6402 C3	7404 C3	T420 A3	T426 B13	T432 C13	T438 G13	T444 G8	T450 G2	
1404 E6	2402 A12	2412 C10	2418 E6	2424 F12	2430 G10	2436 H2	2442 H13	3404 A2	3410 A13	3416 B8	3422 C4	3428 D5	3434 D12	3440 D11	3446 E11	3455 F7	3464 F6	3470 G8	3477 G6	3483 G13	5400 E7	6403 D3	7405 D8	T421 A3	T427 C13	T433 C14	T439 G13	T445 E7	T451 G2	
1405 F4	2403 B3	2413 D4	2419 E11	2425 F13	2431 G10	2437 H4	2443 H13	3405 A11	3411 A13	3417 B9	3423 C5	3429 D10	3435 D12	3441 D10	3447 E12	3456 F5	3465 F10	3471 G8	3478 G8	3484 G14	5401 G11	7400 A1	7406 E13	T422 B13	T428 C13	T434 D13	T440 G14	T446 F7	T452 H2	
1406 G14	2405 C8	2414 D12	2420 E11	2426 F2	2432 G10	2438 H5	3400 A3	3406 A12	3412 B2	3418 B12	3424 C10	3430 D10	3436 D13	3442 D11	3448 E13	3457 F5	3466 G13	3472 G8	3479 G8	3485 H6	5402 G12	7401 A4	7407 H13	T423 B13	T429 C13	T435 E12	T441 G14	T447 F6	T453 H2	



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CONTROL BOARD - LAYOUT DIAGRAM

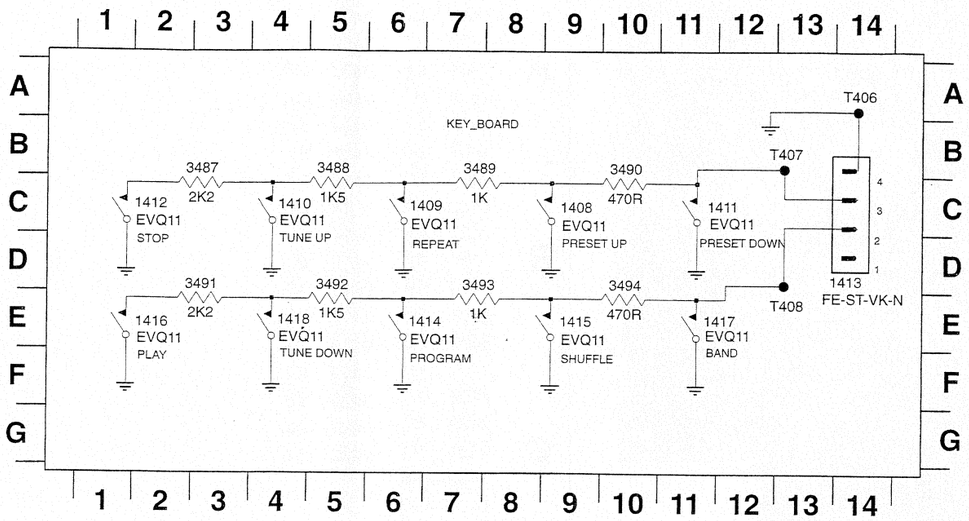


401	A2	9405	B6								
402	B7	9406	C6								
1402	A1	9407	C7								
1404	B5	9408	C7								
1405	B7	9409	B7								
1406	B1	9410	B6								
1407	C1	9411	B7								
2405	C3	9412	C4								
2423	C5	9413	B3								
2433	C2	9414	C4								
2435	C6	9415	B2								
5400	C4	9416	A3								
5401	B5	9417	B2								
6400	A2	9418	C7								
7400	A6	9419	C2								
7401	A4	9420	B6								
9400	B2	9421	A2								
9401	B1	9422	A2								
9402	B5										
9403	C6										
9404	B3										

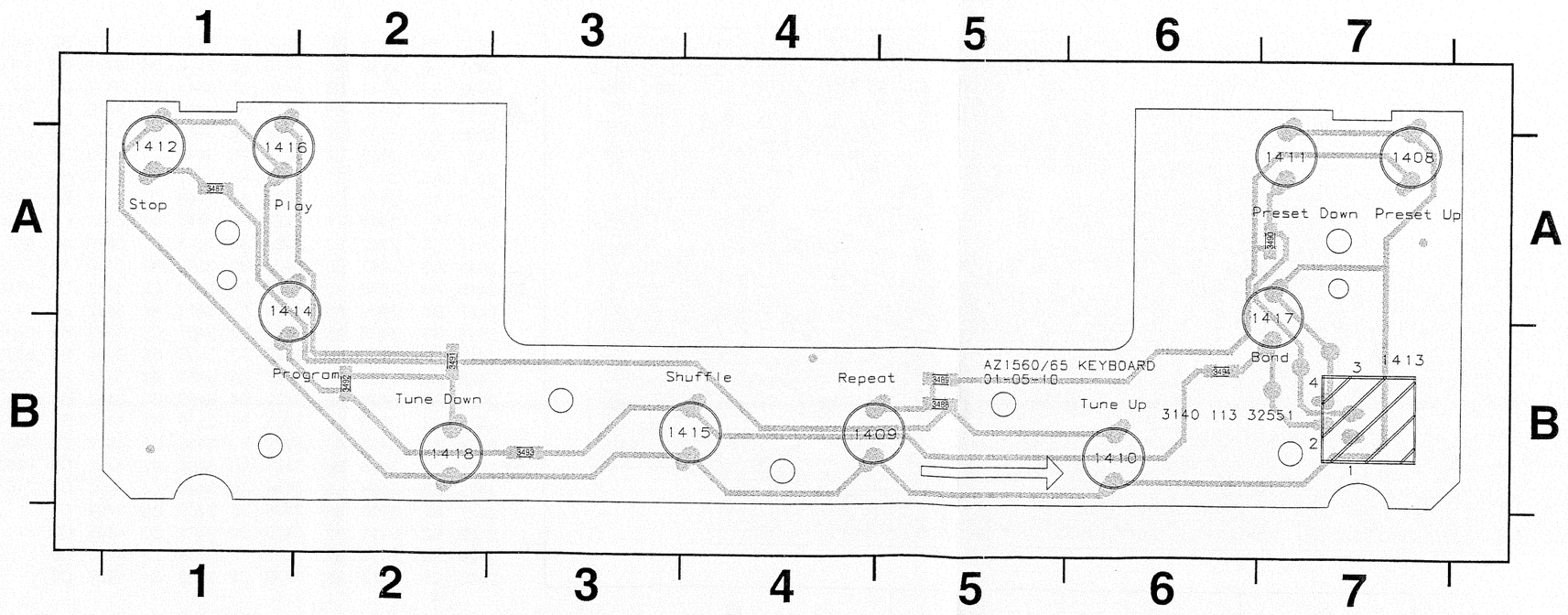
2400	A2	2431	B6	3414	A1	3439	C4	3470	B2	4408	C6
2401	A6	2432	B6	3415	A5	3440	B4	3471	B2	4409	C6
2402	A6	2434	B3	3416	A5	3441	B4	3472	C2	4410	C5
2403	A2	2436	B6	3417	B4	3442	C4	3473	B2	4411	C5
2406	A6	2437	C6	3418	A6	3443	C4	3474	B2	4412	C5
2407	A6	2438	C6	3419	A6	3444	C4	3475	B2	4413	C5
2408	A6	2439	C6	3420	A2	3445	A1	3476	B6	4414	B5
2412	A6	2440	C6	3421	A1	3446	C4	3477	B2	4415	B5
2413	A1	2441	C6	3422	A1	3447	A1	3478	C2	4416	C4
2414	A6	2442	B6	3423	A3	3448	A1	3479	B2	4417	C4
2415	B6	2443	B6	3424	B5	3449	A2	3480	A2	4418	A2
2416	A6	3400	A2	3425	B5	3450	C2	3481	C2	4419	C2
2417	B3	3401	A6	3426	A3	3451	A2	3482	B6	6401	A6
2418	B3	3402	A5	3427	B5	3455	C3	3483	B6	6402	A1
2419	A6	3403	A5	3428	A2	3456	B2	3484	B6	6403	B1
2420	A6	3404	A2	3429	B4	3457	B2	3485	A2	7402	A5
2421	A6	3405	A6	3430	B4	3458	C3	3486	B6	7403	A5
2422	A2	3406	A5	3431	B1	3459	B2	4400	B5	7404	B1
2424	A1	3407	A5	3432	B2	3463	C3	4401	C2	7405	B4
2425	A1	3408	B6	3433	A3	3464	B2	4402	C2	7406	A1
2426	B6	3409	B6	3434	A6	3465	C3	4403	C2	7407	B6
2427	B2	3410	B5	3435	B5	3466	B6	4404	C3		
2428	B2	3411	B5	3436	C4	3467	C3	4405	C3		
2429	B6	3412	A2	3437	C4	3468	C4	4406	C6		
2430	C6	3413	A5	3438	C4	3469	C4	4407	C6		

KEYBOARD - CIRCUIT & LAYOUT DIAGRAM

1408 C9	1411 C11	1414 E6	1417 E11	3488 C5	3491 E3	3494 E10	T408 D13
1409 C6	1412 C1	1415 E9	1418 E4	3489 C7	3492 E5	T406 A14	
1410 C4	1413 C14	1416 E1	3487 C3	3490 C10	3493 E7	T407 B13	



1408 A7	1410 B6	1412 A1	1414 A1	1416 A1	1418 B2	3488 B5	3490 A7	3492 B2	3494 B6
1409 B4	1411 A7	1413 B7	1415 B4	1417 A7	3487 A1	3489 B5	3491 B2	3493 B3	



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